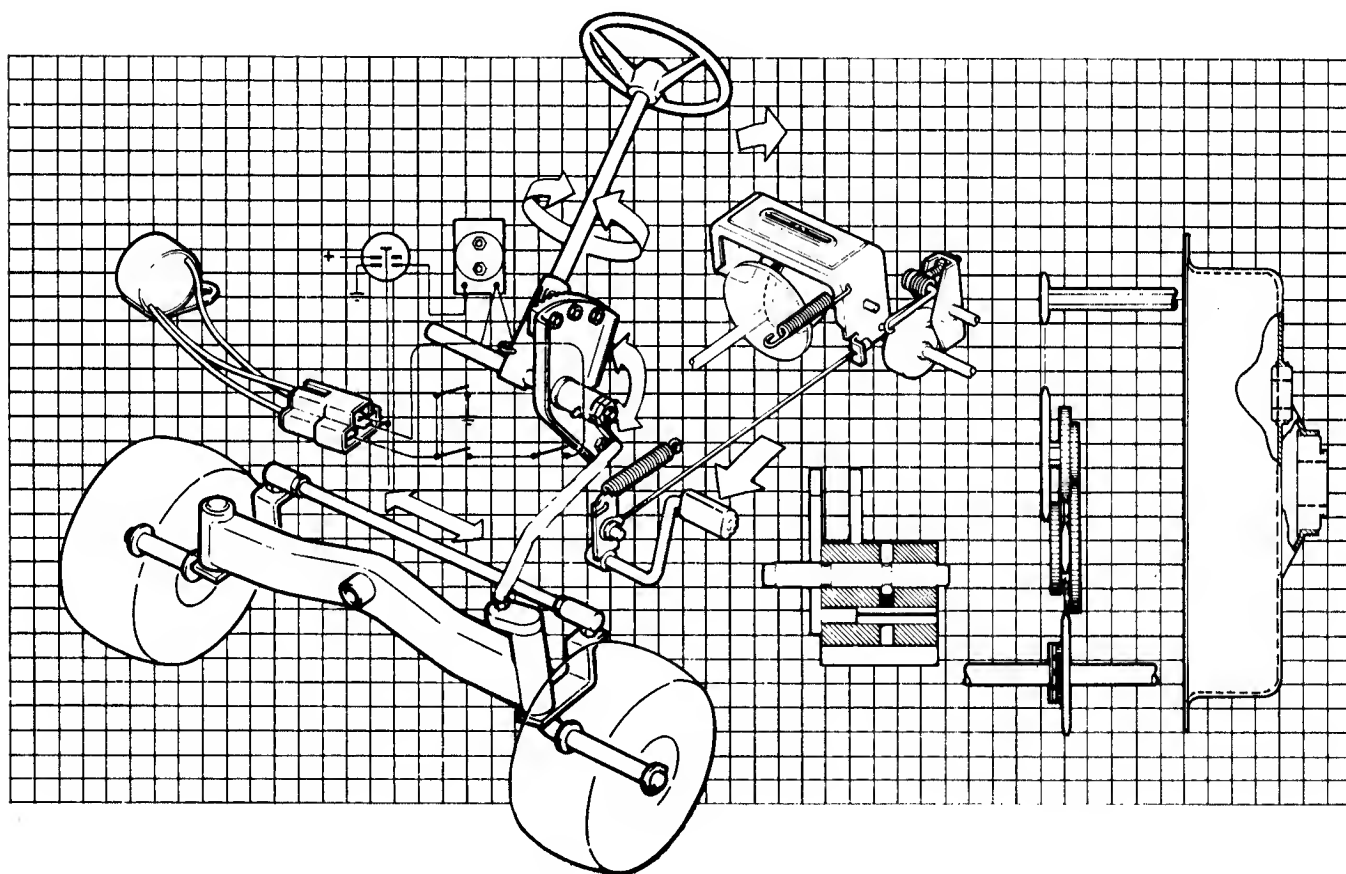


# **SNAPPER**®

## **MODEL LT11, LT12.5 & LT16 SERIES 0, 1 & 2 DISC DRIVE TRACTORS**



# **SERVICE MANUAL**

(Refer to Service Manual #07007 for Series 3 & Later Yard Tractors)

**SNAPPER POWER EQUIPMENT**  
McDonough, GA • 30253



# LT11, LT12, LT16 SERIES 0, 1 & 2 DISC DRIVE LAWN TRACTORS

---

## TABLE OF CONTENTS

	SECTION
GENERAL INFORMATION	1
OPERATION	2
TROUBLESHOOTING	3
PREVENT MAINTENANCE	4
ELECTRICAL SYSTEM	5
BRAKE/CLUTCH SYSTEM	6
DRIVE TRAIN	7
STEERING AND FRONT AXLE	8
MOWER ATTACHMENTS	9

SECTION INDEX

	page
HOW TO USE THIS MANUAL	
Organization	2
Warnings and Cautions	2
Improvements	2
SERIAL NUMBER LOCATION	3
SPECIFICATIONS	3
WORK SHOP SAFETY	
Adjustment	4
Repair	4
SET-UP INSTRUCTIONS	5
DEALER PRE-SALE CHECKLIST	6

# General Information

---

## HOW TO USE THIS MANUAL

### Organization

This manual contains service and maintenance information for the Snapper LT Series lawn tractor and mower assemblies. This manual is divided into numbered sections for quick and easy reference. All information for servicing a part should be read before repair work is started to avoid needless disassembly.

Throughout this manual, reference will be made to “right” and “left.” This is determined by sitting in the operator’s seat facing forward.

### Warnings and Cautions

Detailed descriptions of standard workshop safety procedures are not included in this manual. This manual does contain WARNINGS for some service procedures that could cause personal injury, and CAUTIONS for some procedures that could damage the tractor or its components. Please understand that these WARNINGS and CAUTIONS do not cover all conceivable ways which service might be done or all possible hazardous consequences. Anyone using service procedures or tools (whether or not recommended by Snapper Power Equipment) must satisfy himself that neither personnel nor property will be jeopardized by the procedures or tools selected.

### Improvements

You are encouraged to report any errors, omissions, or recommendations for improving this publication.



# General Information

## SPECIFICATIONS

### ENGINE

Refer to engine manufacturer's manual for specifications

### ELECTRICAL SYSTEM

Starter: 12 volt gear drive  
Ignition: Magnetron  
Alternator: Tri-circuit

### FUEL SYSTEM

Fuel Capacity: 5 quarts  
Air Cleaner: Dual element-Paper filter cartridge and oil-foam pre-cleaner.  
Carburetor: Flo-jet w/fuel pump

### DRIVE TRAIN

Friction Disc System provides 6 forward speeds and 1 reverse in both ranges of the transmission and enables on-the-go shifting.

Transmission: Dual Range (Hi/Lo)  
Brake: Drum and Band on transmission  
Ground Speed: .6 to 5.5 MPH

### TIRES

Front: 15 x 600—6 (10 psi)  
Rear: 18 x 6.50-8 (8 psi)

## WORKSHOP SAFETY

### Adjustment

- Never make any adjustment with mower or other attachment engaged.

### Repair

- Before test operating the tractor, read the operating instructions in Section 2.
- Stop the engine, disengage the mower (turn mower blade switch off), remove the key and wait for moving parts to stop before performing repair or making any adjustments.
- Do repair work in a well lighted, ventilated area.
- To prevent accidental starting, disconnect the spark plug wire and fasten away from spark plug.
- Do not use an ordinary jack to hold the tractor in a raised position. Use jack stands or supports that hold up both sides of the frame. This is especially important when raising the rear end. Because of the pivot between front axle and frame, both sides of the frame must be supported. Block the wheels that remain on the ground.
- Do not use gasoline as a solvent. The fumes are hazardous to health and are a fire hazard. Use nonflammable solvent.
- Always wear safety goggles when using compressed air to clean parts or machine.

## SET-UP INSTRUCTIONS

The following steps are required during the pre-delivery set-up of the Snapper Lawn Tractor. The set-up instructions for tractor attachments are included with the attachments. Be sure to fill in the checklist at the time of purchase.

### Activate Battery

The battery is installed but is shipped dry. Allow time for activating it before delivery of the tractor. Pay attention to the precautionary statements on the battery and in this instruction. Electrolyte and an automotive type charger are needed.

- ☐ Lift the hood and remove the battery. Place on level surface in well ventilated area.
- ☐ Remove the filler caps and add battery grade (1.265 specific gravity) sulfuric acid 3/16" above plates. Reinstall caps and wait for about 30 minutes then recheck cells and add sulphuric acid as needed to bring the level back up to 3/16" above plates. **DO NOT OVERFILL!**
- ☐ With caps removed, connect the battery charger up to the battery following instructions provided with the charger. If time allows, slow charge the battery at 1 AMP for ten hours. As an alternate, charge at 3 AMP rate for four hours.
- ☐ Reinstall caps. Carefully place the charged battery in the tractor battery bracket and secure with strap. Connect the red boot over positive terminal.

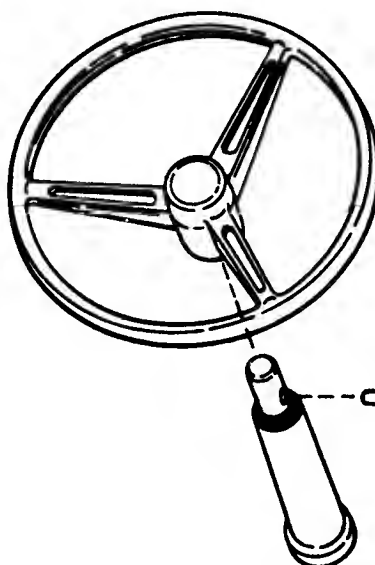
### CAUTION

Keep sparks and flames away from battery at all times! Battery acid is corrosive. Rinse empty acid containers with water and mutilate before discarding. If acid is spilled on battery, bench or clothing, etc., flush with clear water and neutralize with baking soda or ammonia solution.

### Run-In Electric Clutch

Burnish the electric clutch to assure proper function by:

- ☐ With mower or snow thrower attached, run engine at 1/2 throttle and cycle clutch ten times —ten seconds on/ten seconds off.
- ☐ Repeat step one except run the engine at full throttle.
- ☐ Stop engine and check airgap of electric clutch at three places. (Refer to section 5, "Electric Clutch"). Adjust as required to .010".

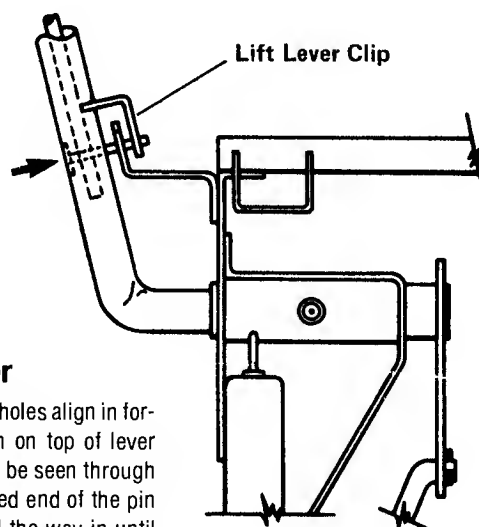


### Install Steering Wheel

Align hole in steering shaft sideways across tractor, place wheel on shaft, align holes and gently drive the pin through the hub.

### Reduce Tire Pressure

The tires are over-inflated for shipping. Reduce the pressure in front tires to 10 psi and in rear tires to 8 psi.



### Connect Lift Lever

Pull lift lever backward until holes align in forward notch, depress button on top of lever until hole in plunger rod can be seen through slot in lever, start the tapered end of the pin in the holes then tap pin all the way in until the end is through the slot in lever clip and other end flush with the outside surface of the lever.

# DEALER PRE-SALE CHECKLIST

After setting-up the tractor as described on the opposite side of this instruction, the following must be accomplished prior to sale. Refer to the Tractor Operator's Manual for specific details. Check (✓) items actually performed and sign below.

## CUTTING BLADE & DECK CHECKS

- \_\_\_ BLADE RETAINING hardware checked for proper tightness.
- \_\_\_ BLADE TIP CLEARANCE inside lower edge of deck checked and corrected as needed (33" Mowers).
- \_\_\_ DECK CUTTING HEIGHT settings checked and adjusted as needed.
- \_\_\_ DECK SIDE TO SIDE level checked and adjusted as needed.\*
- \_\_\_ DECK FRONT TO REAR setting checked and adjusted as needed.\*

\*(With tires properly inflated-refer to operator's manual for settings).

## PRE-START CHECKS & SERVICES

- \_\_\_ TIRES checked and inflated to correct pressures.
- \_\_\_ ENGINE OIL level checked.
- \_\_\_ DIFFERENTIAL checked and grease added as needed.
- \_\_\_ CHAIN CASE checked and grease added as needed.
- \_\_\_ FUEL added to tank and system checked for leaks.
- \_\_\_ BATTERY (not overfilled!) reinstalled and properly connected.

## OPERATIONAL TESTS

- \_\_\_ INTERLOCK SYSTEMS checked to insure proper functioning.
- \_\_\_ ENGINE STARTED and throttle control settings checked.
- \_\_\_ ALL OPERATIONS as listed on left side of console checked.
- \_\_\_ SPEED SELECTOR returns to N from R when clutch/brake pedal depressed.
- \_\_\_ TRACTOR DOES NOT CREEP when shifted into N with clutch/brake pedal released.
- \_\_\_ IGNITION SWITCH checked to insure engine stops when switched OFF.

## DEMONSTRATION & INSTRUCTION

- \_\_\_ DEMONSTRATED proper operation of mower to purchaser.
- \_\_\_ INSTRUCTED purchaser to read and follow instructions in Operator's Manual.
- \_\_\_ PERSONALLY HANDED Operator's Manual to purchaser.
- \_\_\_ ASSISTED purchaser in completing Product Registration card.

## DEALER'S RECORDS

Sale Date \_\_\_\_\_ Model \_\_\_\_\_ Serial No. \_\_\_\_\_  
Dealer's Name \_\_\_\_\_ Signature \_\_\_\_\_  
Address \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_  
TRACTOR WILL BE USED COMMERCIALY? YES \_\_\_ NO \_\_\_  
Purchaser's Name \_\_\_\_\_ Signature \_\_\_\_\_  
Address \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

## SECTION INDEX

	page
<b>PRESTART CHECKS</b>	<b>2</b>
<b>Seat Adjustment</b>	<b>3</b>
<b>Steering Wheel</b>	
<b>Adjustment</b>	<b>3</b>
<b>ROLLING</b>	<b>4</b>
<b>STARTING ENGINE</b>	<b>4</b>
<b>TO STOP MOTION</b>	<b>4</b>
<b>TO START MOTION</b>	<b>5</b>
<b>PARKING</b>	<b>5</b>
<b>MOWING</b>	<b>6</b>

# Operation

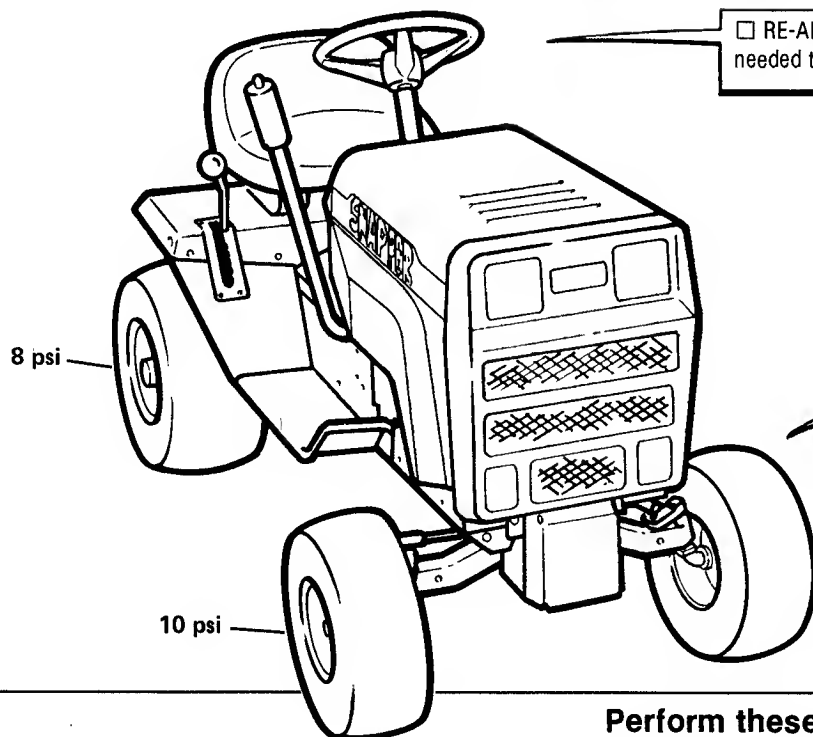
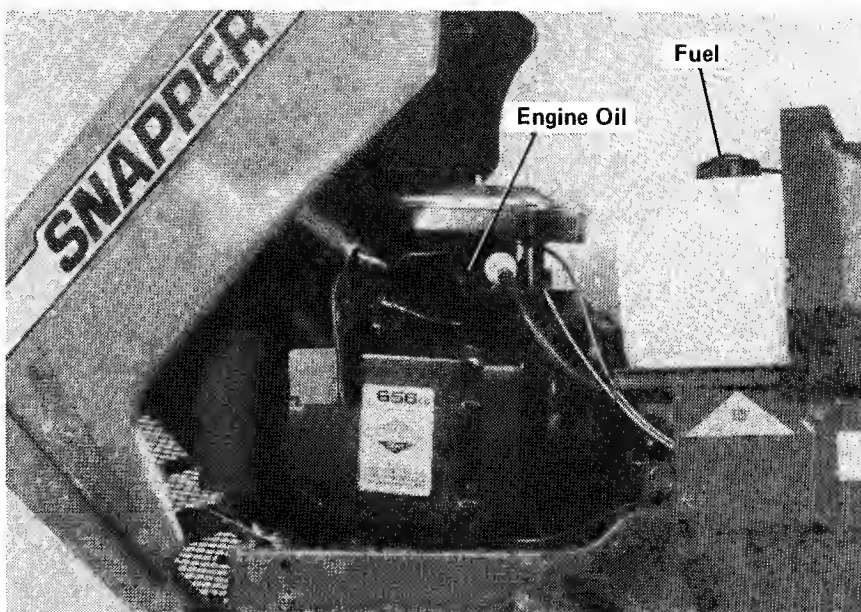
## PRESTART CHECKS

Become thoroughly familiar with the location of all controls and the function of each before operating the machine. Make sure each operator reads the important safety precautions on page 2 of the operator's manual and all safety messages on the tractor and attachments.

☐ CHECK FUEL and add gasoline to bring the level up to but not higher than the lower edge of the filler neck.

☐ CHECK ENGINE OIL and add new oil as needed to bring level up to (but not over) the full mark on the dipstick.

☐ CHECK EXTERIOR SURFACES and remove any accumulation of grass, oil, chaff, dirt, etc. especially from areas such as cooling inlets and outlets on tractor and cooling fins on engine.

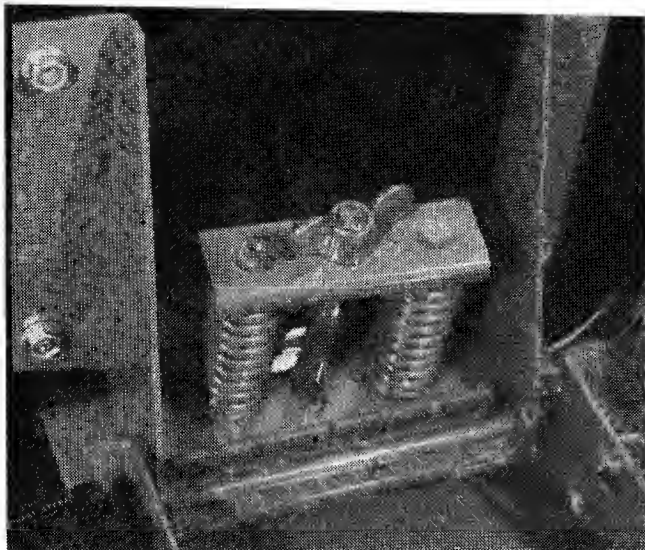


☐ RE-ADJUST SEAT & STEERING WHEEL as needed to most comfortable position.

☐ CHECK TIRES and add air as needed to bring pressure up to specifications (10 psi front, 8 psi rear tires).

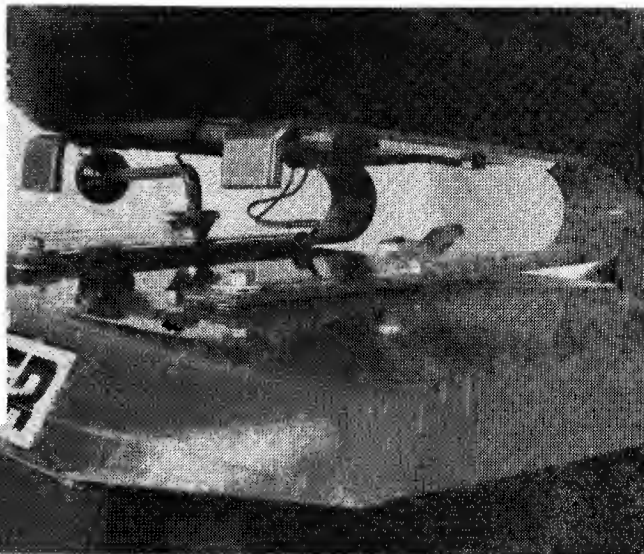
**Perform these checks before starting the engine.**

## PRESTART CHECKS

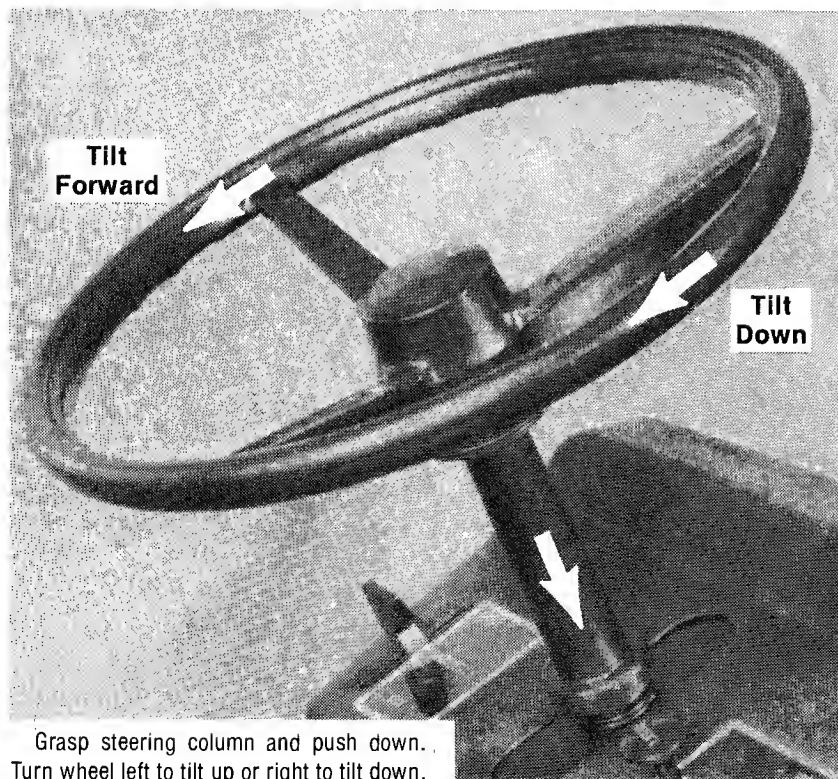


**Seat Tension Adjustment:** (On tractors so equipped) Raise seat and turn large wing nut clockwise for heavier operator or counterclockwise for lighter operator.

**Fore & Aft Adjustment:** With machine stopped, loosen the two wing-nuts on seat rails. Sit in operator's seat and while depressing the clutch/brake pedal, slide the seat forward or rearward to the most comfortable position then lock in position by tightening both wing-nuts.



### Seat Adjustment



Grasp steering column and push down.  
Turn wheel left to tilt up or right to tilt down.

### Steering Wheel Adjustment

# Operation

## ROLLING

The tractor can be easily pushed and maneuvered by hand out of tight places. To do this, shift axle range selector to roll.

## STARTING ENGINE

Know beforehand how to stop the tractor in preparation for possible emergencies. Forward or rearward motion is stopped by pushing the CLUTCH/BRAKE pedal all the way down. The engine is stopped by turning the engine ignition key in switch to OFF position. Keep these points in mind while operating the tractor.

The tractor is equipped with interlocks to prevent starting of the engine until the following conditions are met:

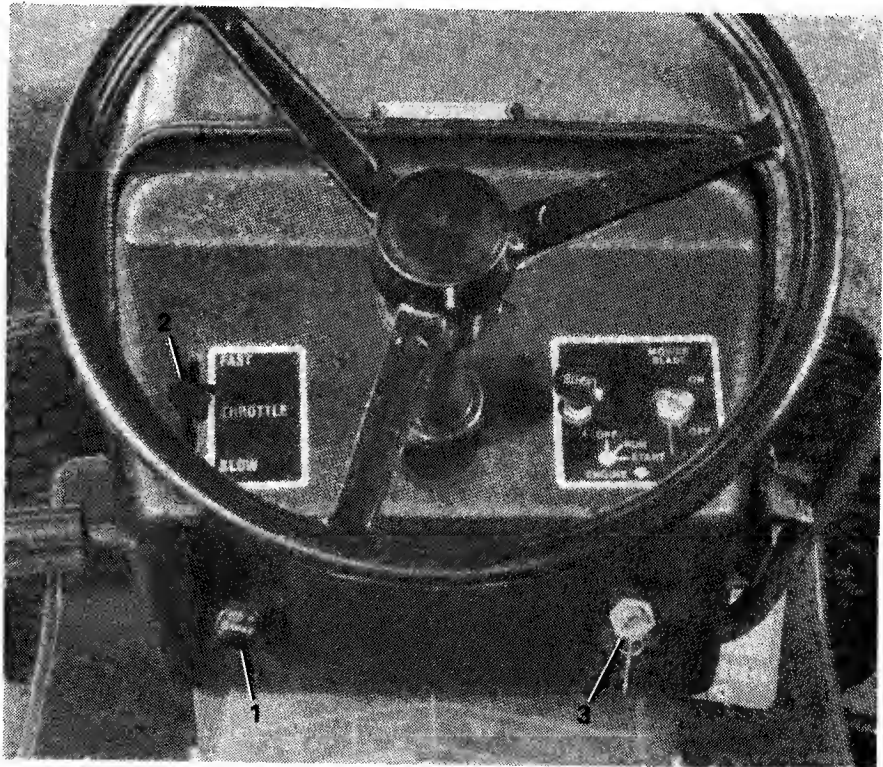
- A. The operator must be seated on the tractor seat.
- B. The CLUTCH/BRAKE pedal must be fully depressed.
- C. The mower blade switch must be in the OFF position.

The seat interlock also functions to shut off the engine in the event the operator's seat is vacated while the machine is in operation. In the event of an interlock malfunction, do not continue operating the tractor until the condition is corrected.

☐ Pull CHOKE knob (1) all the way out to allow starting cold engine. Little or no choking will be needed when restarting warm engine.

☐ Move engine THROTTLE (2) past midpoint into a FAST setting.

☐ Insert key in ENGINE IGNITION switch (3), turn key to START position to crank engine and hold until engine starts then release. NOTE: Limit cranking intervals to five seconds duration to prevent overheating of starting motor and/or depletion of battery



energy. Normally five seconds is sufficient cranking time for starting. If this time is exceeded locate and correct cause of starting problem.

☐ As engine warms, gradually push choke knob back in to panel. Move throttle to desired engine speed setting.

## TO STOP MOTION

Push Clutch/Brake pedal all the way down to stop forward or rearward motion.

## TO START MOTION

After the engine has been started and is running smoothly, proceed as follows to start forward or rearward motion.

□ Before releasing the Clutch/Brake pedal, shift the axle into HI (fast) or LO (slow) range with the selector **(1)** located to the left of the operator's seat. NOTE: To avoid gear damage, DO NOT shift axle range with machine in motion!

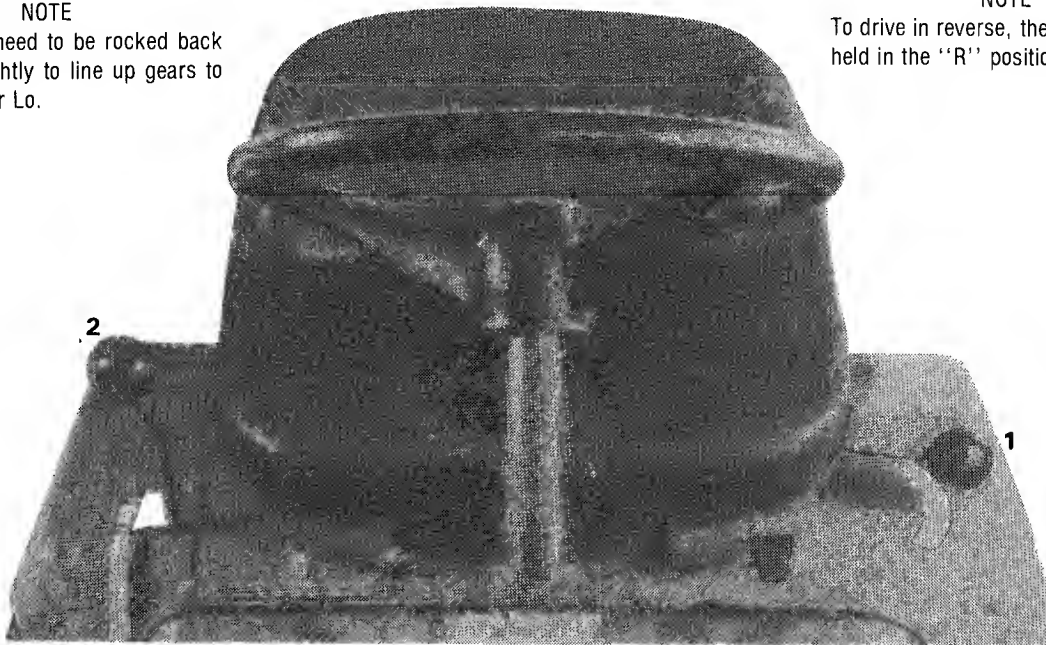
### NOTE

Tractor may need to be rocked back and forth slightly to line up gears to shift into Hi or Lo.

□ With Clutch/Brake pedal depressed, shift Speed selector **(2)** to **1** for forward or **R** for reverse and release pedal. For comfort and safety always shift back to **1** before starting forward.

### NOTE

To drive in reverse, the lever must be held in the "R" position.

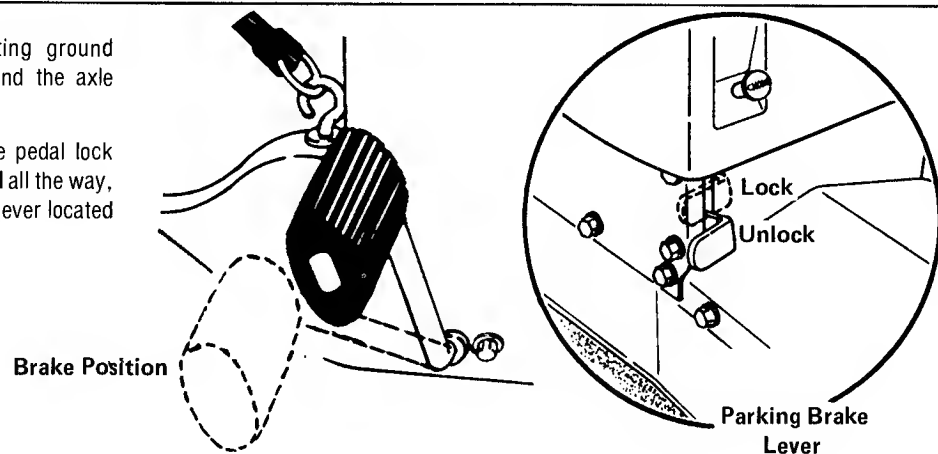


## PARKING

Set parking brake by shifting ground speed selector to N position and the axle range selector to LO or HI.

Set parking brake by shifting ground speed selector to N position and the axle range selector to LO or HI.

On models equipped with the pedal lock parking brake, depress the pedal all the way, and lift up on the parking brake lever located on the left side of the console.



# Operation

## INSPECTING MOWING AREA

Clear the work area of objects that might be thrown by mower. Make a systematic search of the mowing area for foreign objects.

## MOWING

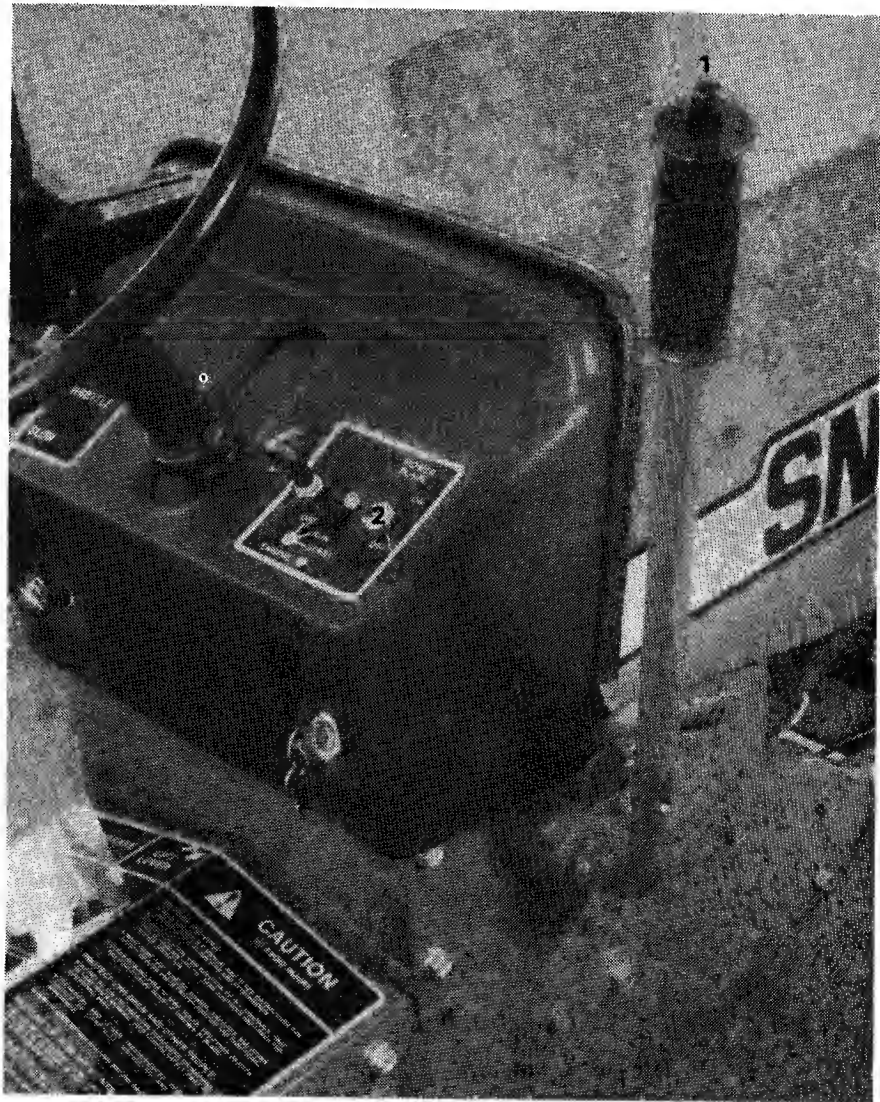
Refer to "Mowing Techniques" to determine cutting height and techniques used to obtain best results. Also refer to section 9, "Mower Attachments," and check for proper adjustment of mower.

Select cutting height by grasping lift handle and press down on the release button (1). To raise mower pull the handle towards you. The weight of the mower tends to pull the handle away from you. To lower the mower, press button and hold back and then allow mower to lower to desired position.

Set PTO switch (2) to ON position. To prevent accidental starting of the blades, the switch is designed so that it must be pulled out before it can be moved forward to the blade ON position.

To suit mowing conditions, experiment by increasing engine speed and/or decreasing driving speed until smoothest cut is obtained without placing engine under heavy strain.

When bagging grass run engine at full throttle and adjust ground speed to suit the cutting conditions.



The cutting height can be changed to any one of nine positions by raising or lowering the cutting deck attachment with the implement lift lever as shown.

## SECTION INDEX

	page
ENGINE	2
DRIVE TRAIN	2
DRIVEN DISC WEAR	
ANALYSIS	3
ELECTRICAL	4

# Troubleshooting

---

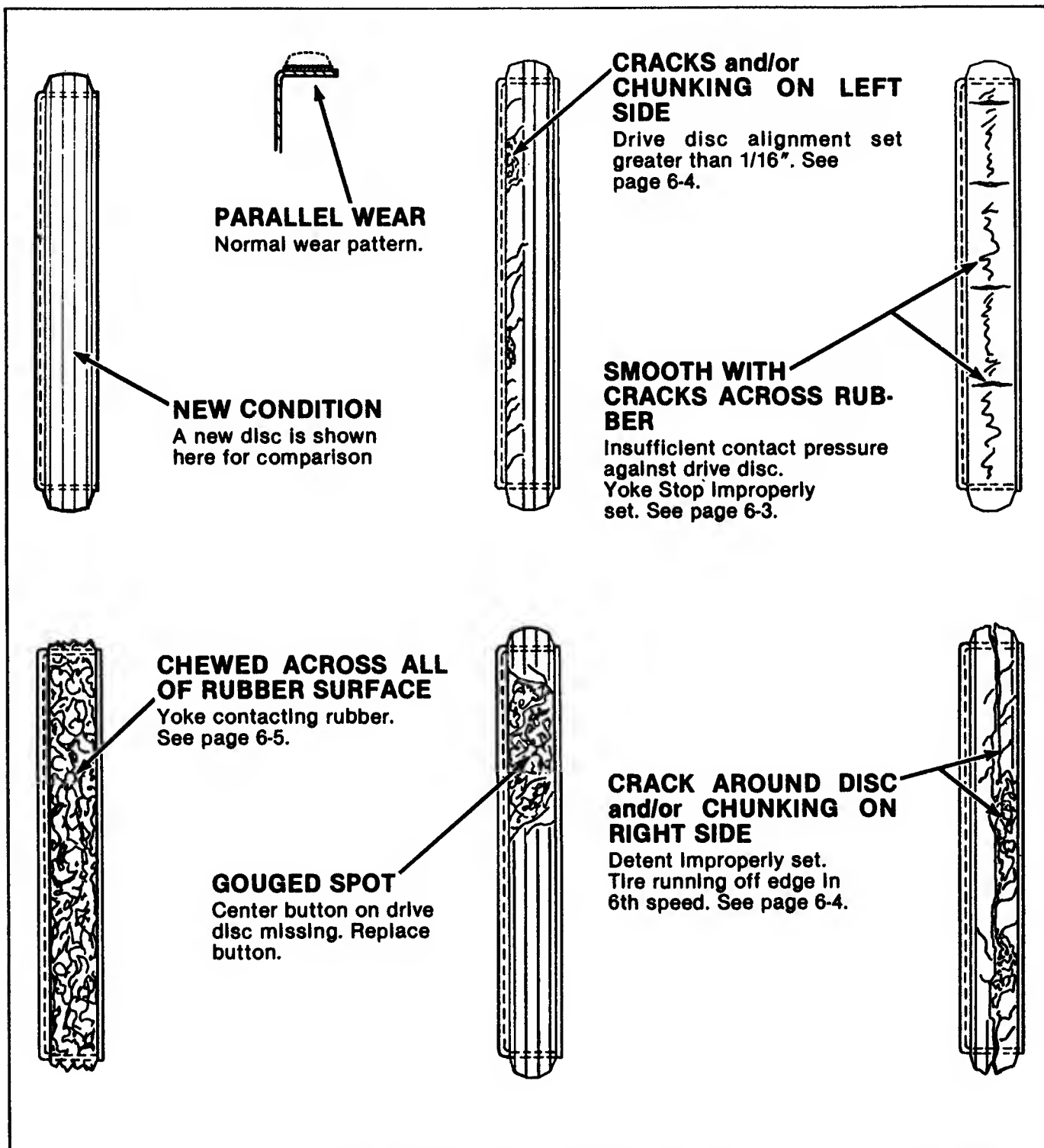
## ENGINE

For troubleshooting information on the engine refer to the engine manufacturers service manual.

## DRIVE TRAIN

Problem	Possible Cause
No Pedal Return	1. Broken or disconnected return spring 2. Pedal binding in pivot bracket
Brake Slips	1. Adjustment too loose 2. Lining worn beyond limit 3. Oil on brake lining
No Clutch or Brake Action	1. Broken or disconnected cable 2. Cable adjusted too long
Weak Brake	1. Adjustment too loose 2. Brake link disconnected 3. Lining worn beyond limit 4. Oil on brake lining
Brake grabs before clutch disengages	1. Brake adjustment too tight 2. Clutch adjustment too loose
No Drive	1. Hi-Lo in Neutral 2. Linkage binding 3. Yoke spring broken 4. Clutch worn or yoke stop pin out of adjustment 5. Axle bolt sheared 6. Key sheared in drive shaft coupler 7. Grease on driven disc 8. Broken chain or gear in transmission or primary chain case
Transmission Leaking	1. Over filled 2. Check or fill plug faulty or missing 3. Case screws loose 4. Oil seal at axle failure or improperly in- stalled 5. Case gasket not sealing properly 6. Bearing loose in case or cover.
Primary Chain Case	1. Overlubricated 2. Faulty fill plug 3. Case screws loose 4. Case gasket not sealing properly
Drives in Reverse Only	1. Broken yoke spring

## DRIVEN DISC WEAR ANALYSIS



Driven disc should be replaced when inspection reveals one of the conditions shown above. For conditions other than normal wear, investigate and correct the cause before continuing operation.

# Troubleshooting

---

## ELECTRICAL

Problem	Possible Cause
Engine Will Not Crank	<ol style="list-style-type: none"><li>1. Check clutch switch with a continuity light. With clutch/brake pedal depressed light should be on. See page 5-8</li><li>2. Check mower blade switch with a continuity light. With switch in OFF position the light should be on when connected to terminals 4 and 5 shown on page 5-9.</li><li>3. Check seat switch for continuity. With operator seated the light should be on. See page 5-9.</li><li>4. Check for weak or dead battery.</li><li>5. Check continuity of circuit breaker.</li><li>6. Check key switch. See page 5-8.</li><li>7. Check solenoid. See page 5-8.</li><li>8. Check interlock module starting circuit. With the red and yellow module wires connected to the wiring harness ground the brown wire to the frame. If engine cranks the module is good.</li><li>9. Check for bad connections or broken wires in the wiring harness with a continuity light.</li></ol>
Engine Cranks But No Fire	<ol style="list-style-type: none"><li>1. Disconnect red wire at engine.</li><li>2. If engine does not fire problem is in engine ignition system.</li><li>3. If engine does fire, check for red wire shorted to ground.</li><li>4. Check key switch. Disconnect wiring harness from switch and connect continuity light from M terminal to frame. With switch in the RUN position the light should be off.</li><li>5. If all switches and wiring are good and engine does not fire, replace module.</li></ol>
Engine Runs but Dies When Clutch/Brake Pedal is Released or Mower Blade Switch is Turned on with Operator Seated.	<ol style="list-style-type: none"><li>1. Check seat switch for continuity. See page 5-9.</li><li>2. Check for broken seat switch wires or poor connections.</li><li>3. Check module interlock system. With red wire connected to wiring harness, connect yellow and brown module wires together.</li><li>4. If engine runs properly, the module is good. Check for break or poor connections in yellow wire to solenoid.</li><li>5. If engine does not run properly replace module.</li></ol>
Engine Starts with Interlock switch(s) open:	<ul style="list-style-type: none"><li><input type="checkbox"/> Check for broken or disconnected red module wire.</li><li><input type="checkbox"/> Check for ground between module case and frame with a continuity light.</li><li><input type="checkbox"/> If all switches and wiring are good and engine continues to start with switch(s) open, replace module.</li></ul>
Engine Runs but Does Not Charge Battery:	<ul style="list-style-type: none"><li><input type="checkbox"/> Check for bad diode. See page 5-9.</li><li><input type="checkbox"/> Check for broken wires or bad connections in wiring harness.</li><li><input type="checkbox"/> Check alternator output per engine manufacturer's specifications.</li><li><input type="checkbox"/> Check battery.</li></ul>

Problem	Possible Cause
Engine Runs but Lights Fail to Operate	<input type="checkbox"/> Check light bulbs. <input type="checkbox"/> Check for broken wires or bad connections in wiring harness. Make sure light wire is grounded to grill. <input type="checkbox"/> Check continuity of light switch. <input type="checkbox"/> Check for bad diode. See page 5-9. <input type="checkbox"/> Check alternator output per engine manufacturer's specifications.
Engine Runs but Mower Clutch Fails to Engage at 3/4 to Full Throttle:	<input type="checkbox"/> Check clearance between clutch plates. See page 5-10. <input type="checkbox"/> Check for broken wires or bad connections in wiring harness. <input type="checkbox"/> Check mower blade switch with a continuity light. With the switch in the ON position the light should be on when connected to terminals #1 and #3 shown on page 5-9. <input type="checkbox"/> Check clutch and replace if bad. See page 5-10.
Engine Fails to Shut Off with Key Switch:	<input type="checkbox"/> Red wire to engine disconnected or broken. <input type="checkbox"/> Check module case for ground. <input type="checkbox"/> Check key switch for ground. <input type="checkbox"/> If all switches and wiring are good and engine fails to stop when key switch is turned off replace module.

## This image shows a single page of white paper with horizontal black ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

## SECTION INDEX

	page
<b>FUEL AND LUBRICANTS</b>	
Engine Oil	2
Primary Chain Case Lubricant	2
Transmission Lubricant	2
Fuel Selection	2
<b>SERVICE CHART</b>	2
<b>ENGINE CRANKCASE</b>	4
<b>PRIMARY CHAIN CASE</b>	5
<b>TRANSMISSION</b>	5
<b>SPARK PLUG SERVICE</b>	6
<b>ENGINE COOLING FINS</b>	6
<b>AIR CLEANER SERVICE</b>	7
<b>FUEL FILTER SERVICE</b>	7

# Preventive Maintenance

## FUEL AND LUBRICANTS

**ENGINE OIL.** Use proper grade of oil for the lowest temperature expected before next oil change period. See your engine owners manual.

**PRIMARY CHAIN CASE LUBRICANT.** Use Snapper 00 grease.

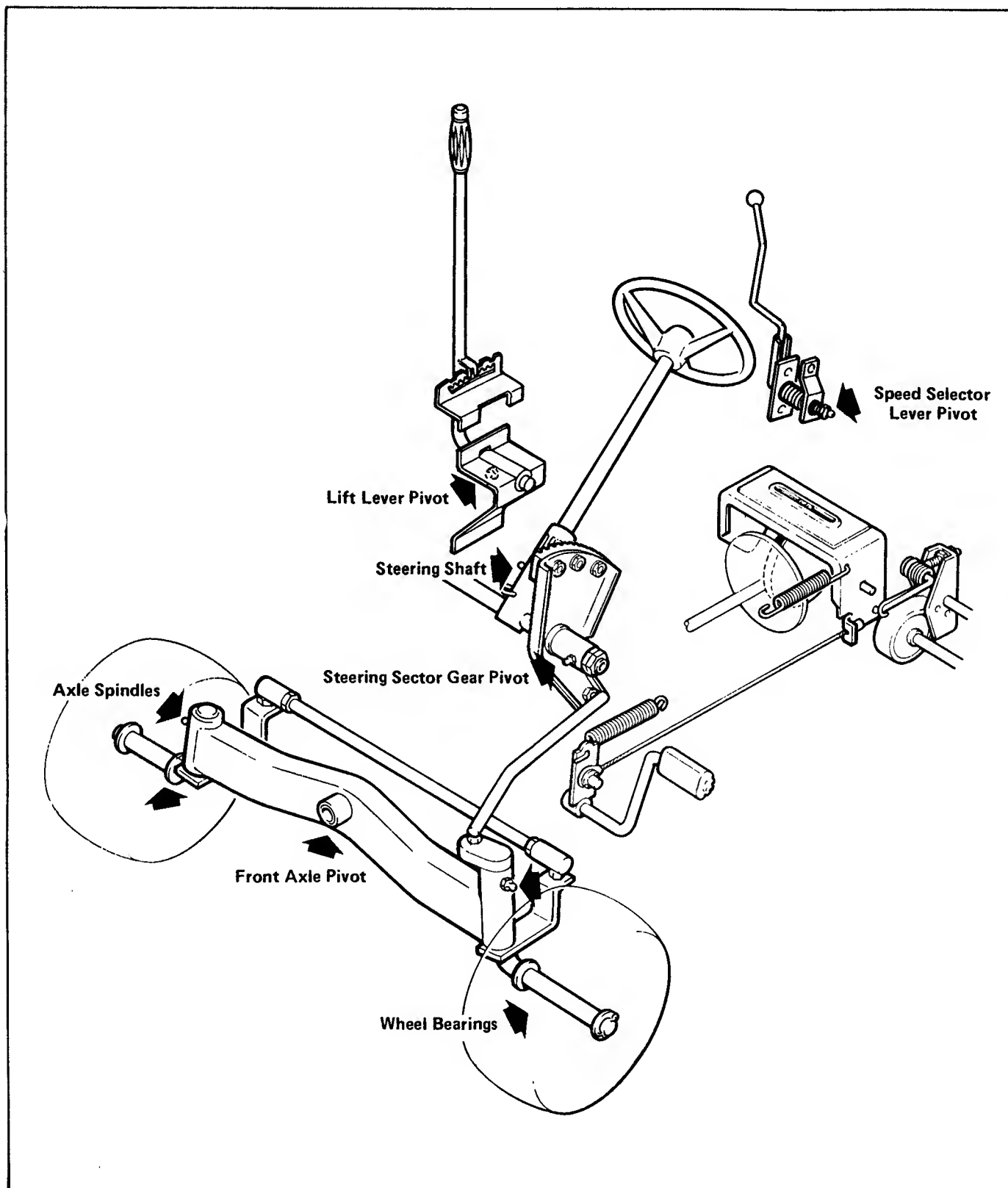
**TRANSMISSION LUBRICANT.** Use Snapper 00 grease.

**FUEL SELECTION.** See your engine owners manual.



## SERVICE CHART

Interval	Part Name	Service	Lubricant or Fluid
Before Use	Engine Crankcase	Check	Engine Oil
	Tire pressures: 10 psi front, 8 psi rear	Check	
	Battery	Check	Distilled Water
Every 25 Operating hrs.	Idler Arm Pivot (41" & 48" Mower)	Lube	Multipurpose Grease
	Front Wheel Bearing	Lube	Multipurpose Grease
	Front Axle Pivot & Spindles	Lube	Multipurpose Grease
	Engine Crankcase Oil	Change	Engine Oil
Twice Yearly or 50 hrs	Engine Air Cleaner	Clean	Engine Oil
	Transmission Lubricant Level	Check	Snapper 00 Grease
	Ground Speed Selector Lever Pivot	Lube	Multipurpose Grease
	Implement Lift Lever Pivot	Lube	Multipurpose Grease
	Steering Shaft	Lube	Multipurpose Grease
End of Season or 100 hrs	Steering Sector Gear Pivot	Lube	Multipurpose Grease
	Chain Case Lubricant Level	Check	Snapper 00 Grease
	Engine Spark Plug	Clean or Replace	
	Engine Fuel Filter	Replace	
	Engine Cooling Fins	Clean	
	Battery	Clean	
	Front End Alignment	Check	
	Mower Spindle(s)	Lube	Multipurpose Grease

**LUBE POINTS**

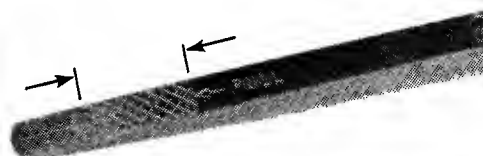
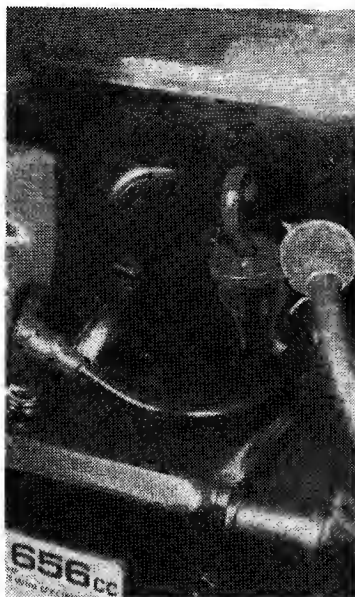
# Preventive Maintenance

## ENGINE CRANKCASE

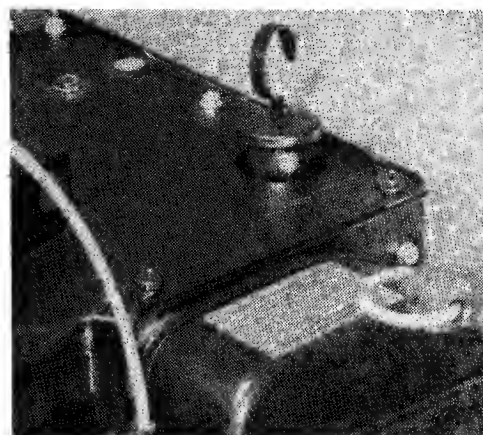
### Checking and Adding Engine Oil

- ☐ Wipe away dirt around dipstick handle before removing.
- ☐ Maintain the oil level at the FULL mark at all times.
- ☐ Add oil of weight and grade specified by the engine manufacturer, slowly through dipstick opening in small quantities and check frequently until full. Do Not Overfill.

LT16



LT11

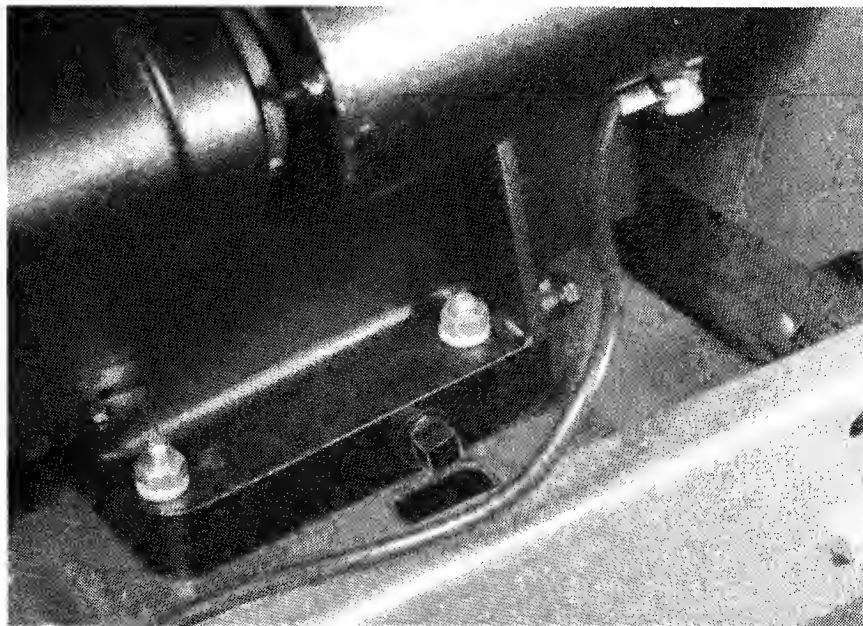


**Check the oil level using the dipstick located at the top of the engine. Be sure tractor is parked on a level surface.**

### Changing Engine Oil

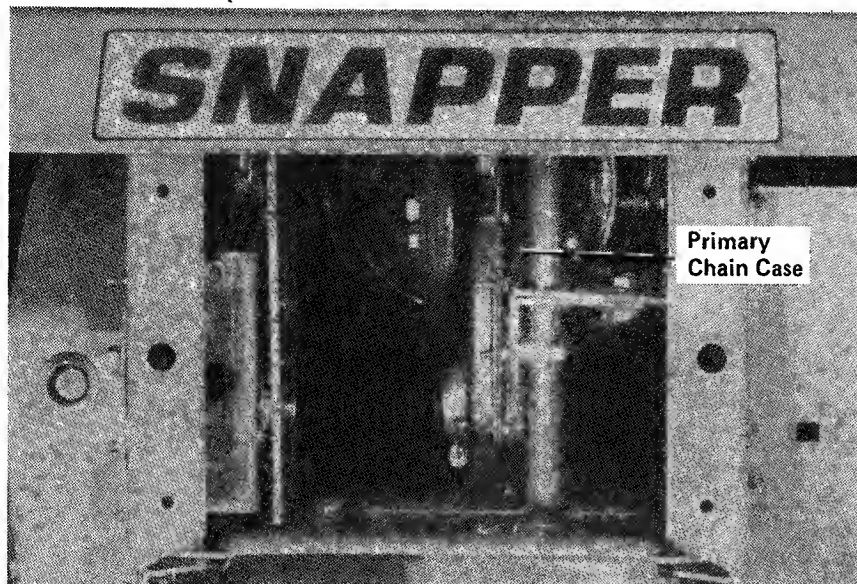
- ☐ Remove drain plug and drain oil into a suitable container. Replace plug after all oil is drained out.
- ☐ Fill crankcase with oil of weight and grade specified by engine manufacturer, through dipstick opening. Capacity is approximately 3 pints. Check level using dipstick frequently until full. Do Not Overfill.

LT11 shown. LT16 drain is in bottom of engine.



**Engine should be at operating temperature (after engine has run 5 minutes or more) when oil is drained. When hot, the oil will drain faster removing dirt and other foreign material held in suspension.**

## PRIMARY CHAIN CASE

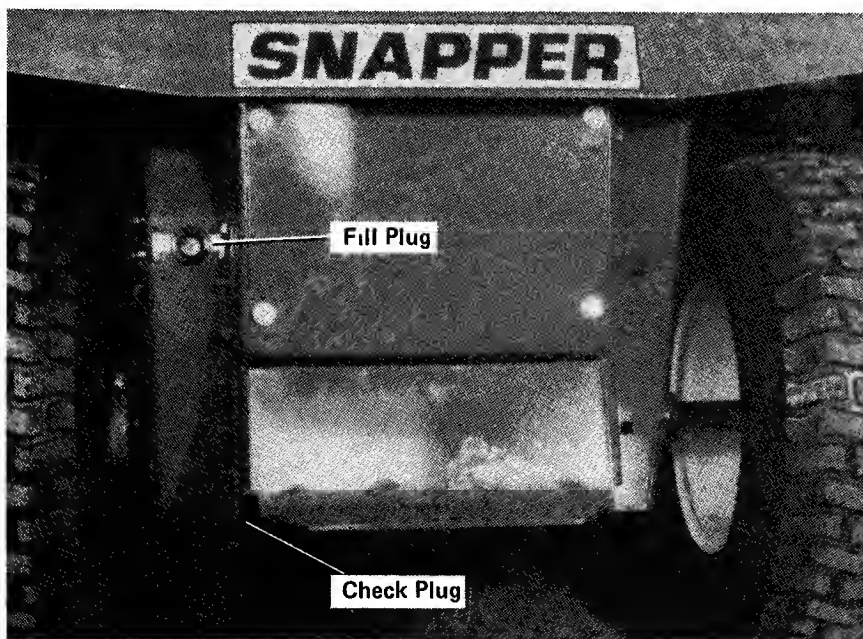


### Checking and Adding Lubricant

- ☐ Remove plug and check for grease. If empty, add one ounce of Snapper 00 grease. Do Not Overfill. Total capacity must not exceed 2 ounces.

The only maintenance required on the chain case is to check for lube. The case requires very little grease—2 ounces maximum. If over lubricated it will leak.

## TRANSMISSION



### Checking and Adding Lubricant

- ☐ Remove check plug (1) to check lube level.
- ☐ Add Snapper 00 grease as needed through fill hole (2) to bring level up to lower edge of check hole.

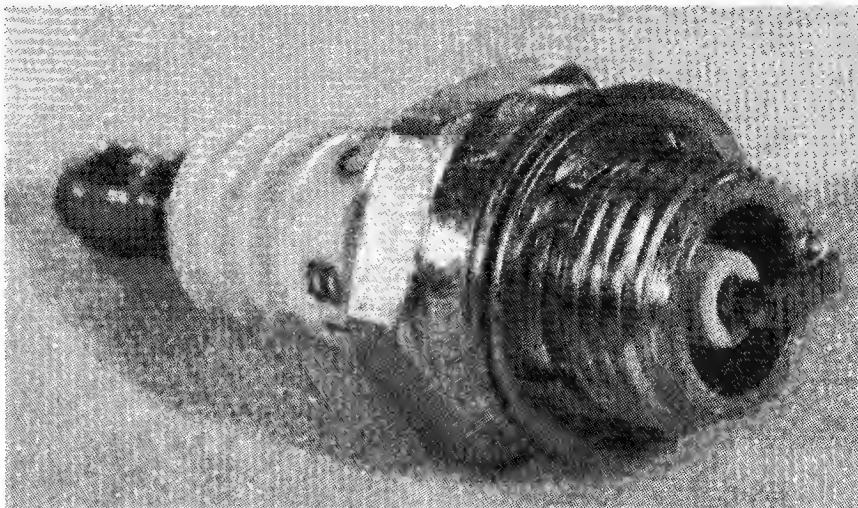
Allow sufficient time for grease to flow from fill hole to check hole to prevent overfilling.

The only maintenance required on the transmission is to maintain a proper lube level. Draining and changing lube is not required unless transmission is disassembled.

# Preventive Maintenance

## SPARK PLUG SERVICE

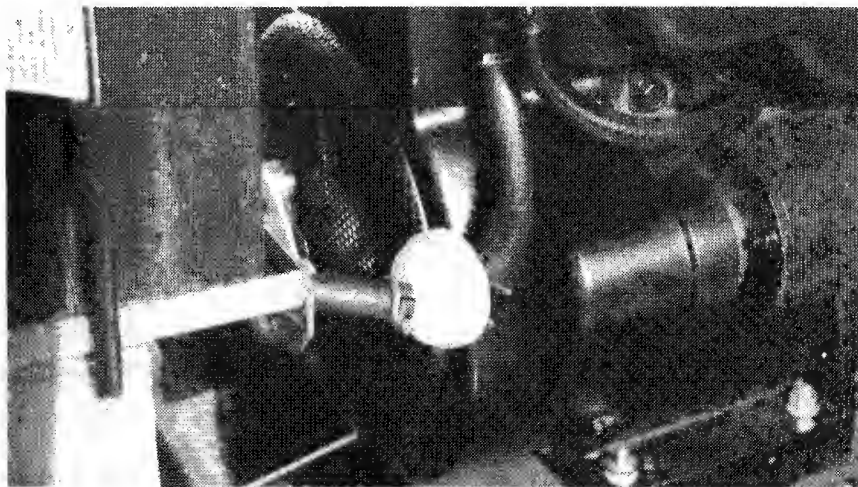
- ☐ Remove spark plug and examine it. Do not clean or otherwise service plug if in poor condition. Best results are obtained with a new plug.
- ☐ Set spark gap as specified in engine manual, install plug and connect wire.
- ☐ Make sure connector terminal on wire fits firmly on spark plug. Reform connector terminal if necessary.



Always clean area around spark plug before removing it to prevent dirt from falling into engine. After removal check its condition. Good operating conditions are indicated if the plug has light coating of gray or tan deposit. A dead white, blistered coating can indicate overheating. A black (carbon) coating can indicate an “overrich” fuel mixture caused by clogged air cleaner or improper carburetor adjustment. Find out what the problem is and correct it to obtain optimum service from the new plug.

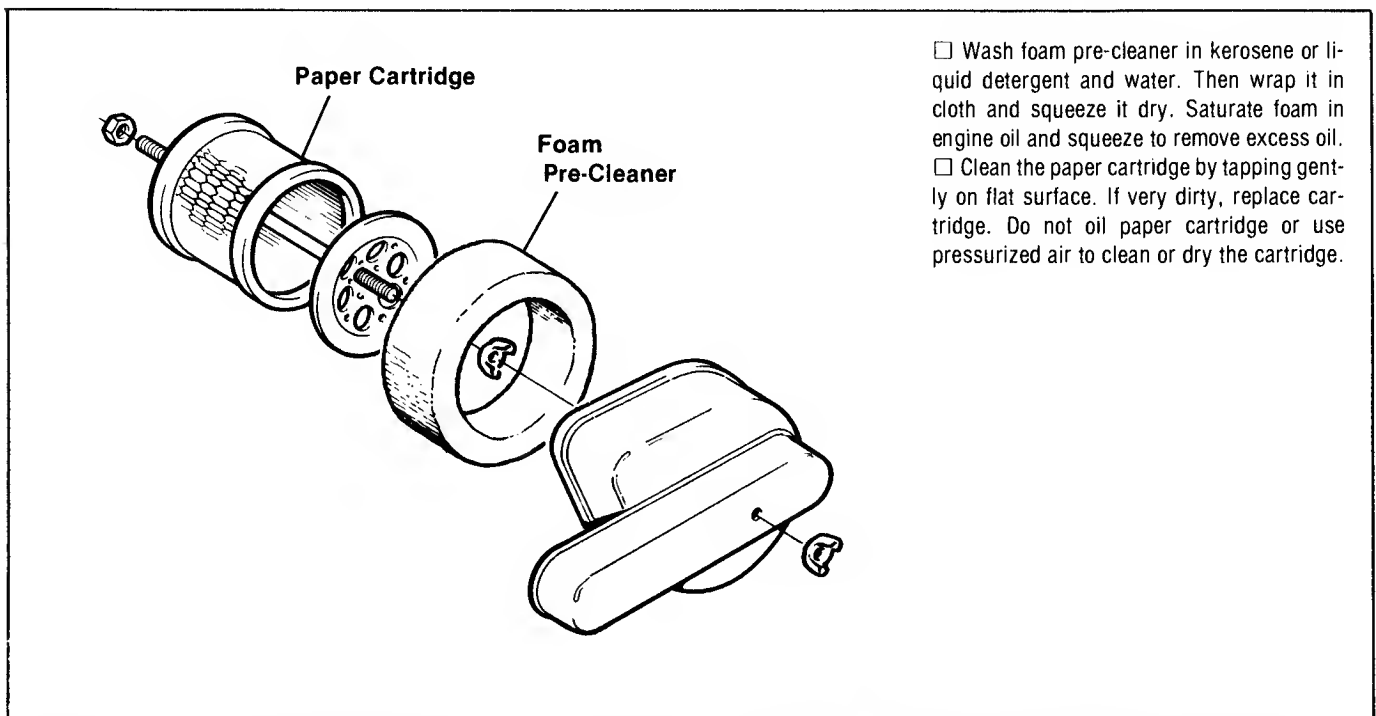
## ENGINE COOLING

- ☐ Clean out grass, chaff and dirt from around engine and under blower housing.



Grass, chaff or dirt can clog the rotating screen and the air cooling system, especially after prolonged service in cutting tall dry grasses. Remove the blower housing and clean the area inside to avoid overheating and engine damage.

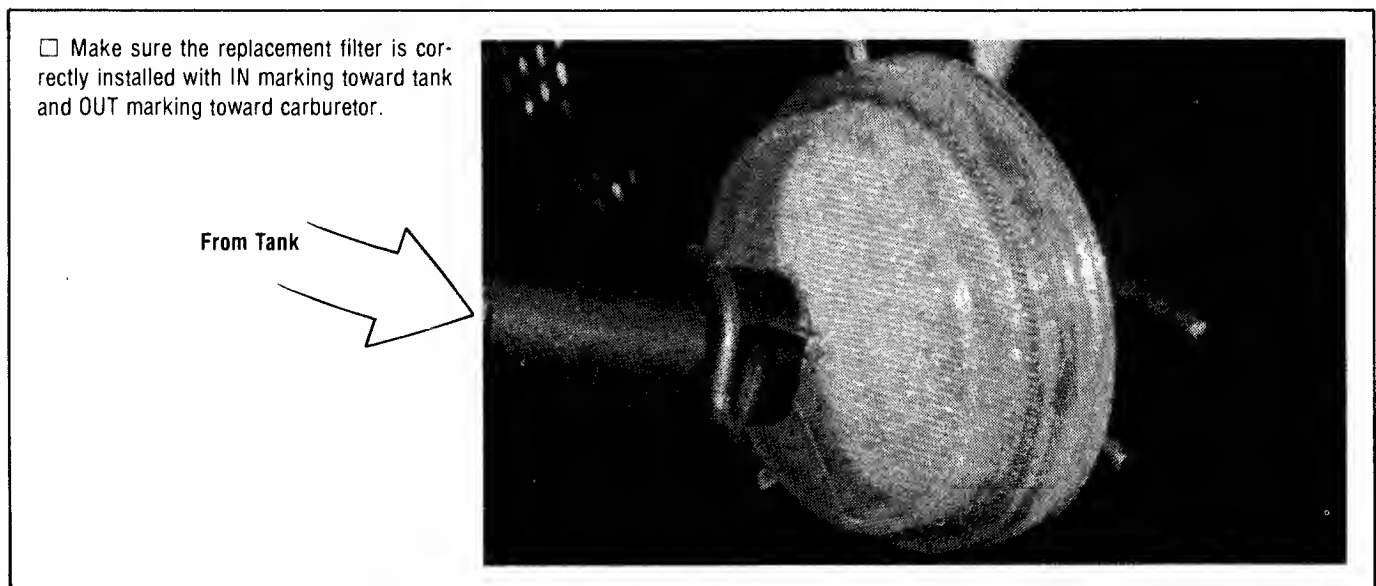
## AIR CLEANER SERVICE



- Wash foam pre-cleaner in kerosene or liquid detergent and water. Then wrap it in cloth and squeeze it dry. Saturate foam in engine oil and squeeze to remove excess oil.
- Clean the paper cartridge by tapping gently on flat surface. If very dirty, replace cartridge. Do not oil paper cartridge or use pressurized air to clean or dry the cartridge.

The engine is equipped with a dual element air cleaner, which consists of a foam pre-cleaner element and a paper cartridge element.

## FUEL FILTER SERVICE



- Make sure the replacement filter is correctly installed with IN marking toward tank and OUT marking toward carburetor.

The engine is equipped with an in-line fuel filter which is transparent, allowing visual check of its condition. Replace filter at regular intervals or sooner if screen shows signs of clogging sediment. Inspect hoses for wear or cracks and replace as required.

## This image shows a full page of blank, lined paper. It features approximately 20 evenly spaced horizontal black lines across the entire width of the page. The lines are thin and consistent in thickness. There are no margins, text, or other markings present on the paper.

## SECTION INDEX

	page
DESCRIPTION	2
PRINCIPLE OF OPERATION	2
WIRING DIAGRAMS	3
BATTERY	
Testing and Maintenance	4
INTERLOCK SYSTEM	
ANALYSIS	8
ELECTRIC CLUTCH	10

# Electrical System

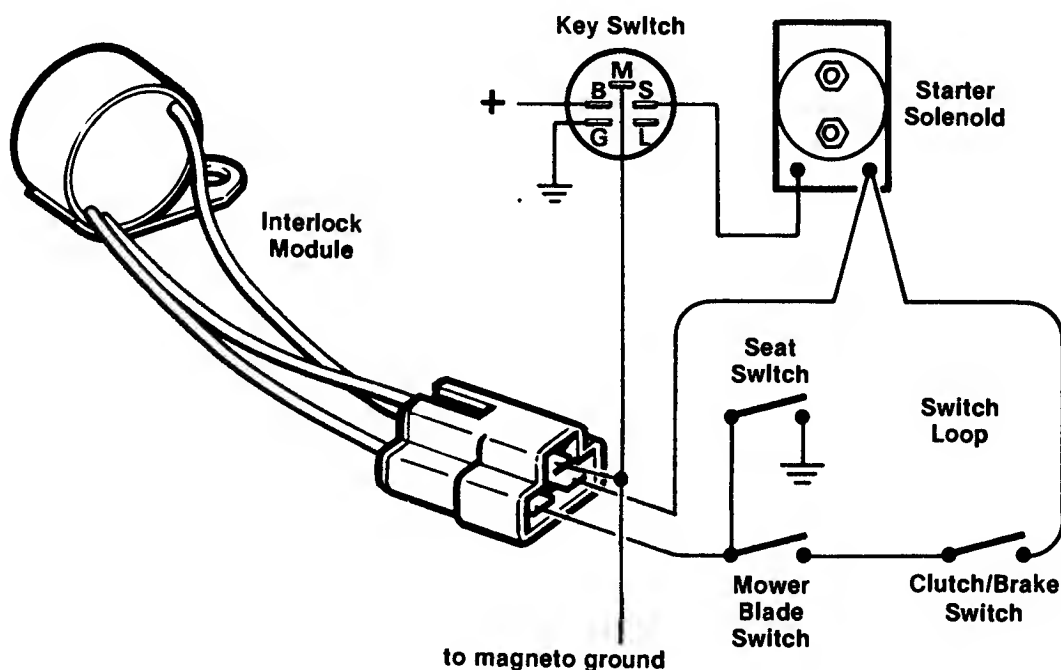
## DESCRIPTION

The electrical system on the LT series tractors are made up of three electrical circuits: Ignition, charging and starting. This section deals only with the starting circuit since the ignition and charging circuits are for the most part contained in the engine. Further information is available from the engine manufacturer's service manual.

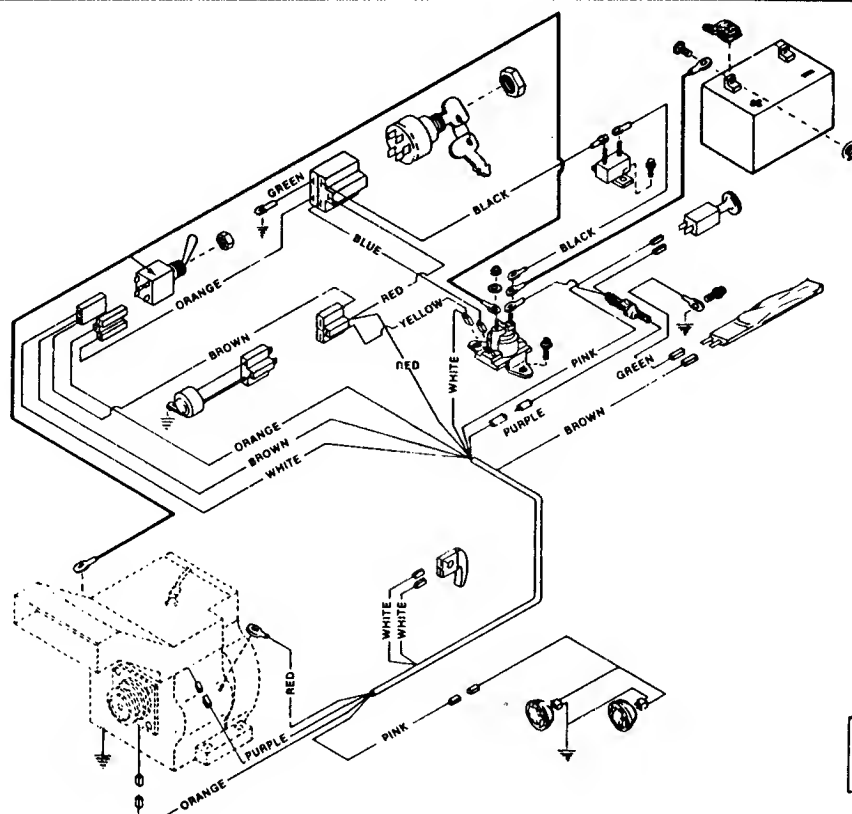
The starting circuit consists of a key start switch, battery, solenoid, starter motor. An interlock module along with three interlock switches are wired into the circuit.

## PRINCIPLE OF OPERATION

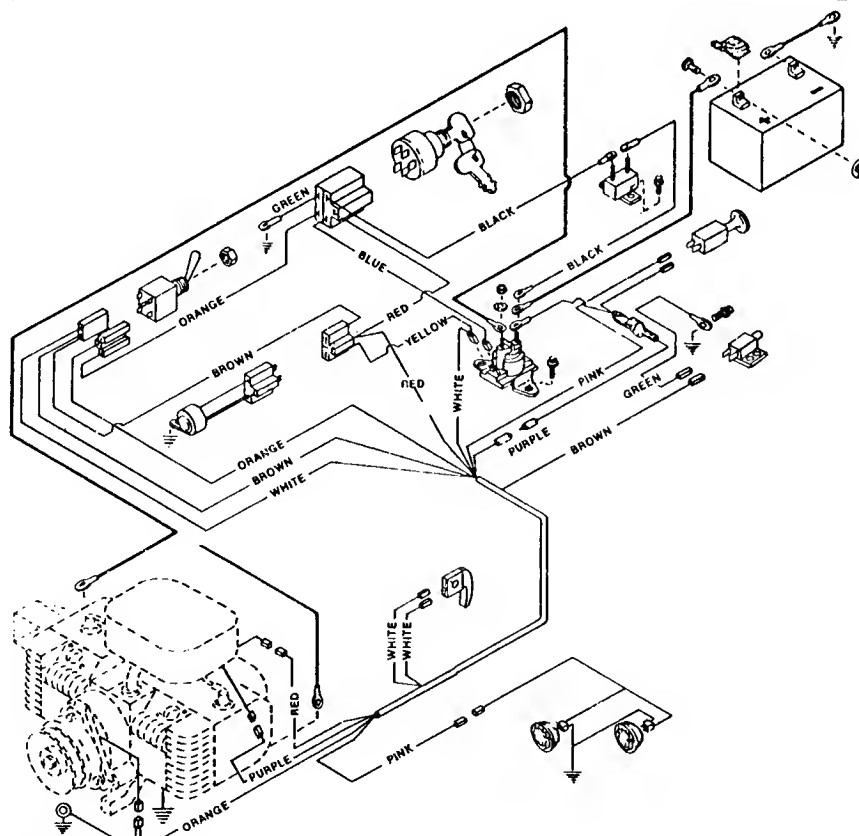
The interlock module contains a switch loop consisting of three interlock switches: Seat switch, clutch switch and mower blade switch. The three switches must be closed before engine can be started. If a switch is open, the circuit is not grounded and the solenoid will not actuate. When the engine is running the key switch is in the RUN position and the operator is in position (seat switch closed), the clutch switch and mower blade can be opened. The module will kill the engine if the operator leaves the seat unless the mower blade switch is turned off and the parking brake is set.



Starting System Configuration



LT11



LT16

# Electrical System

---

## BATTERY

Most dry charge battery problems are caused by improper activation practices and the lack of proper maintenance.

When activating the dry charged battery, first remove the battery from the tractor. Never try to pour electrolyte in a new battery while it is still mounted on the equipment. Place the battery on a level surface. Make sure the vent holes in the cap are open so that gas produced when the battery is charging can escape.

Battery acid (electrolyte) is corrosive in nature and care should be exercised when handling it.

Fill each cell with  $1.265 \pm .05$  specific gravity battery grade electrolyte to no more than  $3/16"$  above the top of the plates. Battery and electrolyte temperature should be at least 70 degrees prior to filling. Allow the battery to set for thirty (30) minutes and add electrolyte if needed to maintain the  $3/16"$  above the plates level.

Slow charge the battery at one amp for ten hours or at a three amp rate for four hours. Due to the length of time required to fully charge the battery, it is not feasible to use the engine for this initial charge. **NEVER USE BOOST CHARGERS.**

When batteries are charging they give off Hydrogen Gas which is explosive if exposed to a spark or lighted cigarette.

After properly activating the battery, inspect it for leaks and make sure the outside of the battery is clean and dry before installing it on the tractor.

When installing an activated battery always connect the ground wire (—) last, this will prevent accidental arching should wrench or pliers touch the frame while connecting the positive wire (+). When removing the battery always disconnect the ground wire (—) first.

**Never overfill the battery.** Maintain the electrolyte level at no more than  $3/16"$  above the plates by adding distilled water as required. If the battery is overfilled the electrolyte will overflow through the caps and on to the top of the battery. As electrolyte spreads it may reach the battery terminals and provide a path for the leakage of electricity and also cause **corrosion and deterioration of metal parts**. If battery terminals are corroded, clean with a wire brush and coat terminals with petroleum jelly.

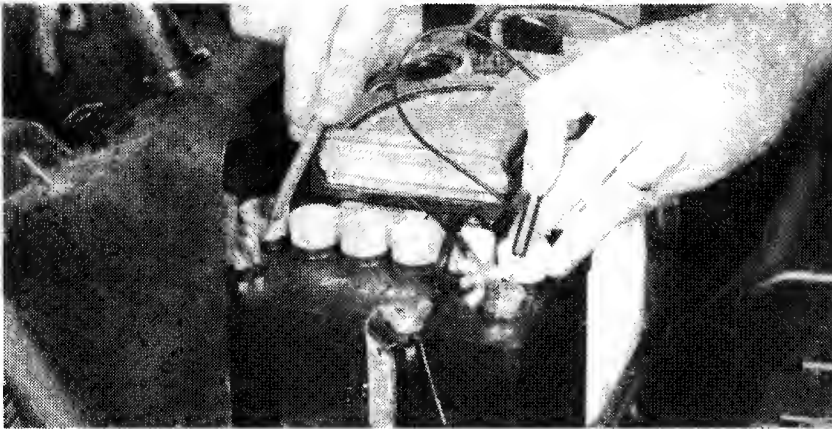
Proper care before off-season storage will greatly lengthen the useful life of the battery. Clean the battery top—remove dirt and grease. Check the electrolyte level and bring it up to  $3/16"$  above the plates; then fully charge the battery. Store the battery in a cool dry area. The battery's state of charge should be checked every 30 days.

Small, inexpensive home-type battery chargers can be good investments. They should be about three (amps), and if used occasionally during the off-season can lengthen battery life.

With proper care, the battery should give the long service life built into it. A battery which does not function properly is not necessarily worn out or defective. It may only need a good re-charge. Therefore, if battery trouble is suspected, a full re-charge and test should be performed. Batteries found to be damaged due to lack of proper care and maintenance will not qualify for warranty.

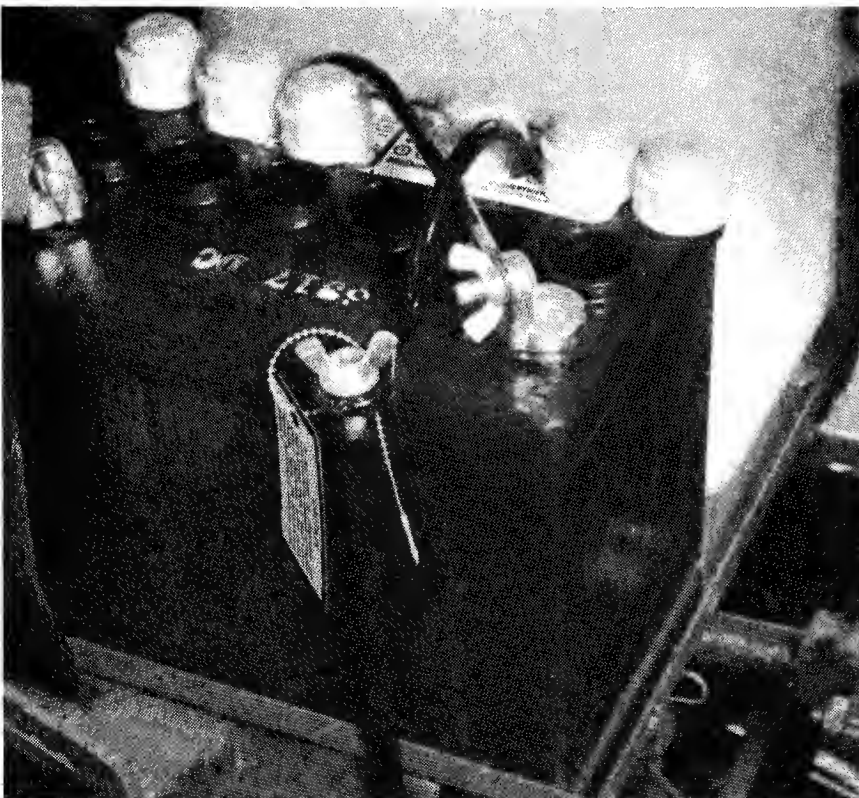
## BATTERY

If the battery is producing 12 volts and the battery cables have continuity, the rest of the cranking system can be systematically tested. However, a full test of the battery includes cleaning and testing battery charge (hydrometer test).



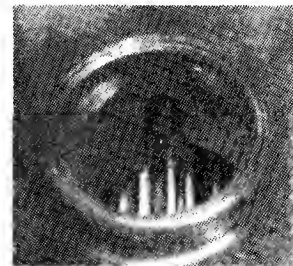
12 V Recorded	Less Than 12 V Recorded
Battery OK for Cranking System Tests	Battery Discharged or Defective
Test Battery Cables	Perform Battery Maintenance

To test battery voltage, set volt ohmmeter (VOM) on DC volts. Place one test probe of VOM on battery positive post and one test probe on negative post.



### Battery Maintenance

☐ Check Fluid Level. Remove battery caps and make sure breather holes are open. Check that fluid is 3/16" above plates. If not, add distilled water. Do not over-fill to the rings.



☐ Clean Battery. **WARNING:** Always disconnect negative cable first and reconnect it last to prevent sparks if positive post is grounded to frame accidentally by a tool. Remove dirt and corrosion with a solution of baking soda and water. Clean posts and cable terminals with a wire brush until metal is shiny. After cables are reattached, coat terminals lightly with petroleum jelly or grease to prevent corrosion.

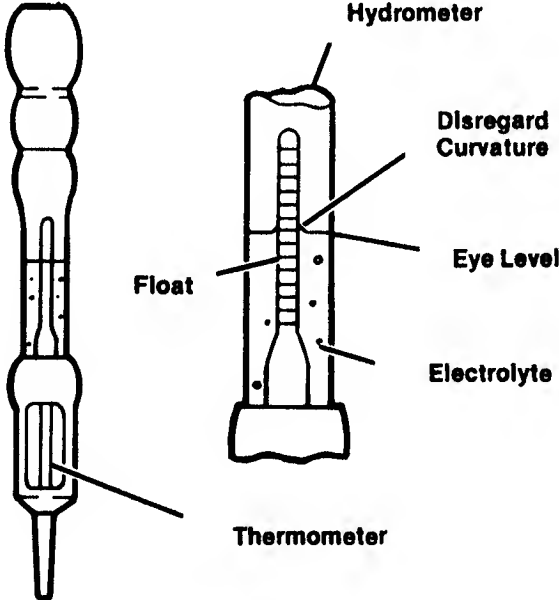
☐ Perform hydrometer (charge) test.

# Electrical System

## HYDROMETER TEST

A hydrometer is an instrument used to check the specific gravity of the battery electrolyte. If specific gravity indicates less than 1.225, the battery must be charged before further testing can be done. A battery which does not accept a charge is unserviceable and no further testing is required.

Hydrometer floats are generally calibrated to indicate correctly at only one fixed temperature, 80° F. When taking a reading at any other temperature, a correction factor must be used. The correction factor is approximately 0.004 specific gravity, referred to as 4 points of gravity. For each 10° F above 80° F, add 4 points. For each 10° F below 80° F, subtract 4 points. Always correct the readings for temperature variation. Test the specific gravity of the electrolyte in each battery cell.



To read the hydrometer correctly, position the top surface of the electrolyte in the hydrometer at eye level. Disregard the curvature of the liquid where the surface rises against the float.

**EXAMPLE**

Hydrometer reading is . . . . .	1.240
Temperature is . . . . .	50°F
Degrees different than 80° . . . . . 30	
Number of 10° intervals . . . . .	3
Times Correction factor . . . . .	3 x 0.004
Correction = . . . . .	0.012
(Correction is subtracted when temperature is lower than 80°)	
	-0.012
Corrected Hydrometer Reading	1.228

A fully charged battery should have a specific gravity reading above 1.225 in all cells before performing full high rate discharge test.

Carefully insert the tip of the hydrometer into the cell to avoid damage to separators. Broken separators could result in premature battery failure. Draw in only enough electrolyte to keep the float off the bottom of the hydrometer barrel with the bulb released. The hydrometer must be kept in a vertical position while drawing in liquid and taking the reading.

## BATTERY TESTING CHART

Hydrometer Test @ 80°F (26.7°C)	State of Charge or Battery Condition	Correction or Remedy
(1) 1.215 Sp. Gr.	(1) Probably Good.	(1) No correction required if variation among cells not over .050 Sp. Gr. Give high rate discharge capacity test. If test O.K., check operation and setting of voltage regulator. Make a thorough check of the electrical system for short circuits, loose connections, corroded terminals, etc.
(2) Less than 1.215 Sp. Gr.	(2) Questionable.	(2) Battery should be recharged. After recharge repeat step No. 1.
(3) Cells showing more than 50 Points (.050) Sp. Gr.) variation in gravity.	(3) A. Short circuit in low cell. B. Loss of electrolyte by leakage or excessive overcharge. C. Improper addition of acid or contaminants. D. Natural or premature failure. E. Cracked box partition.	(3) Try to recharge battery. If .050 Sp. Gr. variation persists battery should be replaced. If battery accepts recharge and variation does not persist repeat step No. 1

Open Circuit Voltage Test	State of Charge or Battery Condition	Correction or Remedy
(4) Battery or cells showing more than ½ charge.	(4) Probably good.	(4) Apply remedy given for No. 1 above.
(5) Battery showing less than ½ charge or cells showing less than ½ charge but not more than .05 volts variation.	(5) Questionable.	(5) Apply remedy given for No. 2 above.
(6) If cell connectors are accessible, cells showing more than .05 variation.	(6) See No. 3 above.	(6) Apply remedy given for No. 3 above.

### High Rate Discharge Test

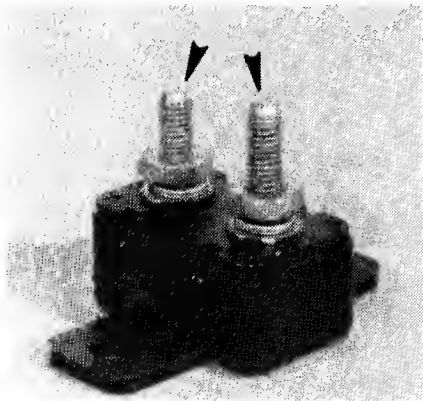
- (7) Use high rate discharge tester in accordance with manufacturer's recommendations. (See common electrical difficulties below.)

# Electrical System

## INTERLOCK SYSTEM ANALYSIS

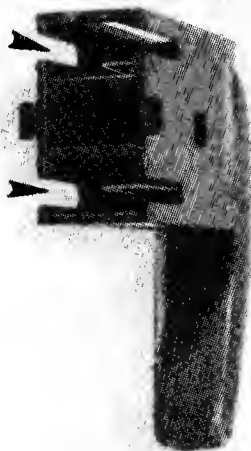
### Circuit Breaker

- ☐ Disconnect wires from circuit breaker.
- ☐ Attach continuity light to both terminals and you should have contact.



### Clutch Pedal Switch

- ☐ Disconnect wires from switch terminals.
- ☐ Attach continuity light to terminals and turn it on.
- ☐ Now press and release the clutch pedal (the light should be on when the pedal is depressed only).



### Solenoid:

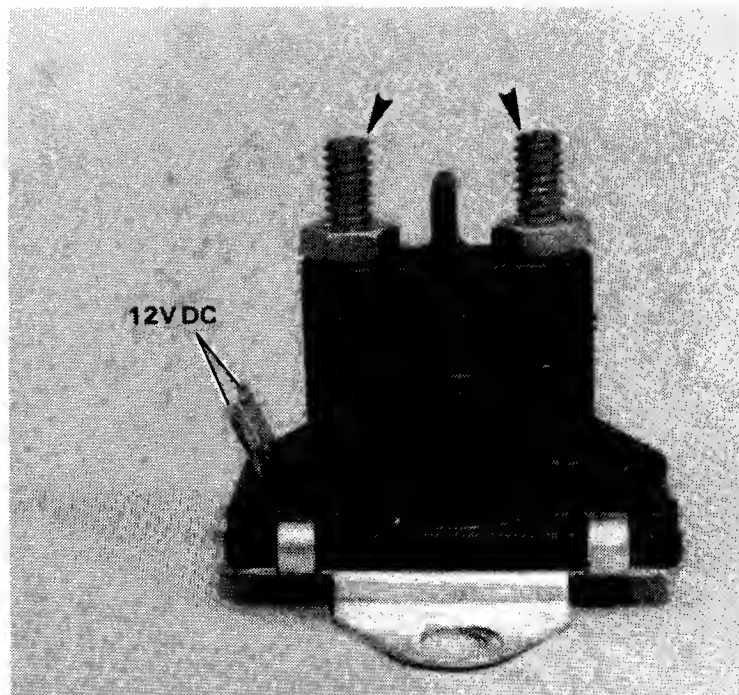
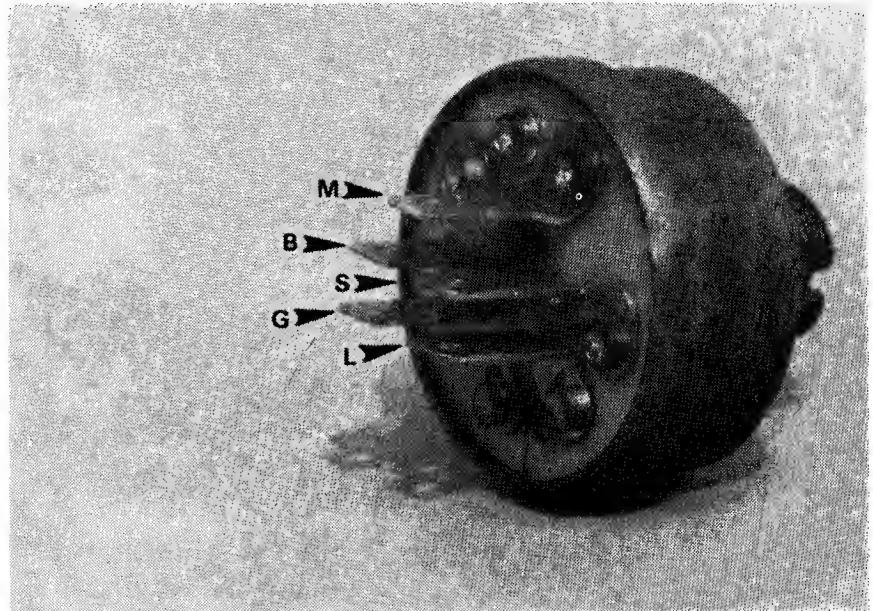
- ☐ Disconnect all wires from solenoid.
- ☐ Connect continuity light to both threaded terminals.
- ☐ Now apply voltage (12 V) to the two plug terminals. At this time the solenoid should click and the continuity light should come on.

### Key Switch:

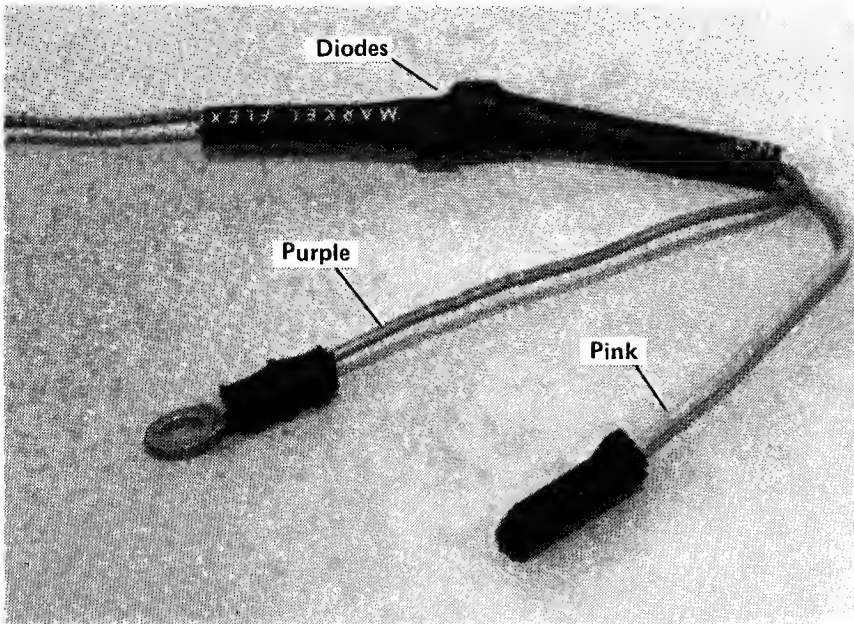
- ☐ Disconnect wires from switch terminals.
- ☐ With switch in "OFF" position you should have contact when continuity light is connected to "M" and "G" terminals only.
- ☐ With switch in "ON" position you should

have contact when continuity light is connected to "B" and "L" terminals only.

- ☐ With switch being held in "START" position you should have contact when continuity light is connected to "B" and "S" terminals
- ☐ Reconnect harness wires to switch.



## INTERLOCK SYSTEM ANALYSIS

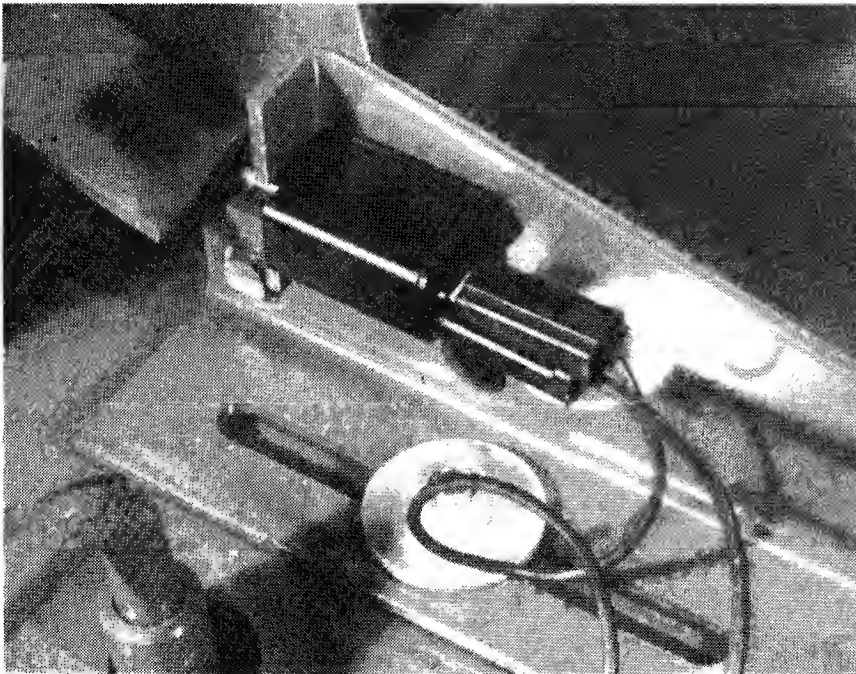


### Diode Harness:

- ☐ Disconnect diode harness terminals from engine and light switch.
- ☐ Connect continuity wire "black" to light switch terminal (pink) and the "red" continuity wire to the engine terminal and you should have contact. If the continuity light wires are switched you should have no continuity.
- ☐ Connect continuity wire terminal "black wire" to engine terminal (purple) and "red" continuity wire to solenoid terminal (purple) and you should have continuity. If the continuity light wires are switched you should have no continuity through the charging diode. (Note: In this continuity tester the black wire is attached to the negative end of the batteries).

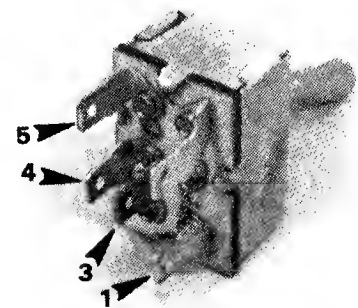
### Seat Switch:

- ☐ Disconnect wires from switch terminals.
- ☐ Attach continuity light wires to terminals and turn it on.
- ☐ With the switch depressed the light should be on.



### Mower Blade

- ☐ Disconnect wires from switch terminals.
- ☐ With switch in "OFF" position the continuity light should be on when connected to terminal #4 and #5 only.
- ☐ With switch in "ON" position the continuity light should be on when connected to terminal #1 and #3 only.

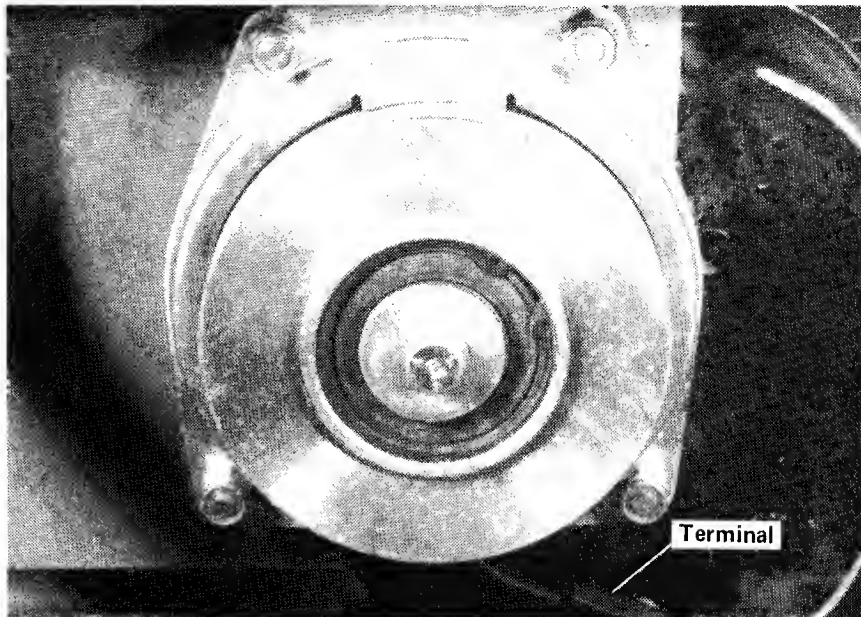


# Electrical System

## ELECTRIC CLUTCH

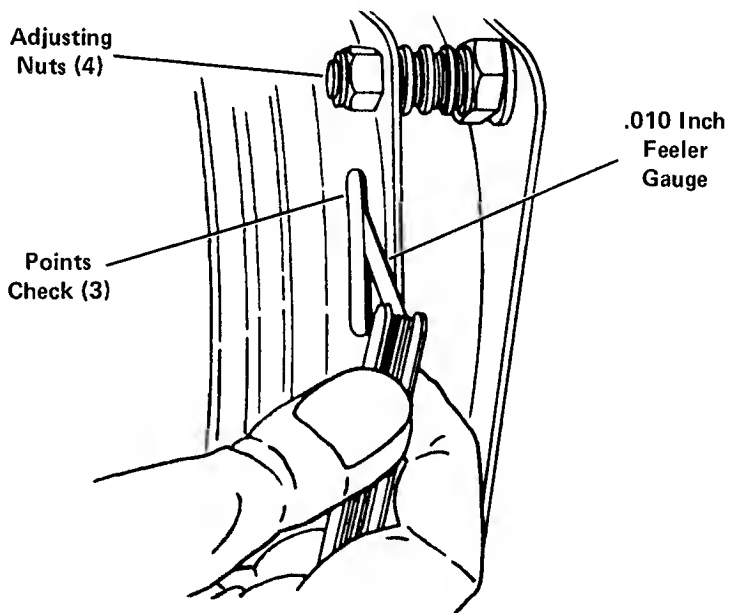
### Electric Clutch Field Coil:

- ☐ Connect OHM meter "+ Red" terminal to coil terminal.
- ☐ Connect OHM meter "- Black" terminal to ground (motor bolt).
- ☐ Resistance in the coil should read between 3.4 and 5.5 KOHM.



### Adjustment

- ☐ The electric clutch should have .010" clearance between the plates to insure proper operation. This can be checked by inserting feeler gauges in the three slots provided and adjusting the spring loaded nuts until .010" is attained. After adjusting the clutch, start the blade 10 times at half throttle and then 10 times at full throttle to burnish the clutch. This will insure the best operation of the clutch after delivery to the customer.



## SECTION INDEX

	page
DESCRIPTION	2
PRINCIPLE OF OPERATION	2
CLUTCH SYSTEM	
Checking	3
Adjusting	3
Drive Disc Alignment	4
Shift Detent Adjustment	4
Drive Disc Removal	5
BRAKE SYSTEM	
Checking	6
Adjusting	6
Overhaul	7

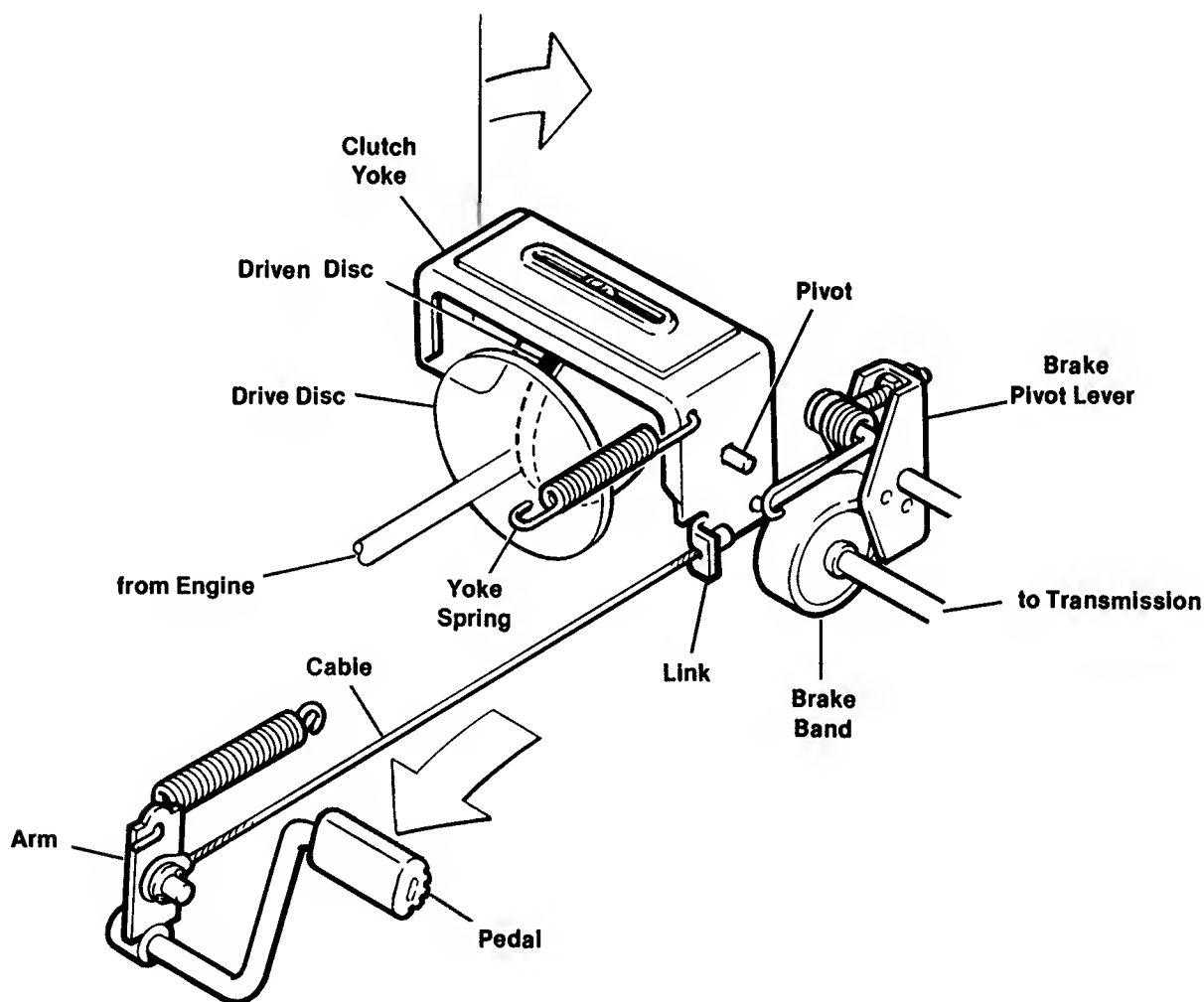
# Brake/Clutch System

## DESCRIPTION

The brake and clutch mechanisms are combined to operate by one pedal. The operator depresses the pedal halfway to disengage the clutch and all the way to apply the brake. The clutch mechanism operates a friction disc system which is described in more detail in section 7.

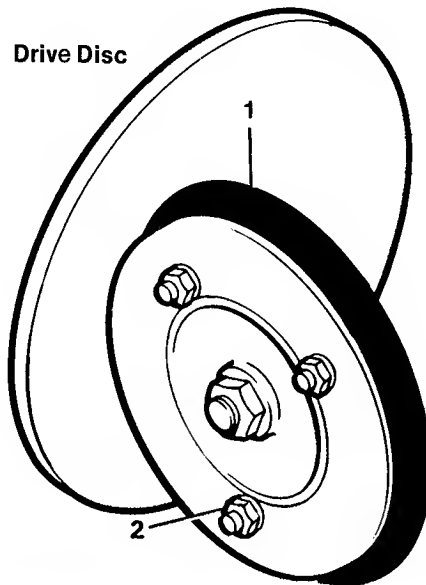
## PRINCIPLE OF OPERATION

As the pedal is depressed it pulls a steel cable connected to the clutch yoke. The yoke pivots causing the driven disc to be pulled away from the drive disc, disconnecting power transmitted from the engine to the rear wheels. The brake band is connected by a link to the clutch yoke so when the yoke pivots it pulls the link to tighten the brake band. Further depression of the pedal causes brake band to tighten enough to make contact with the brake drum. The drum is keyed to the third reduction shaft which extends out of the transmission.



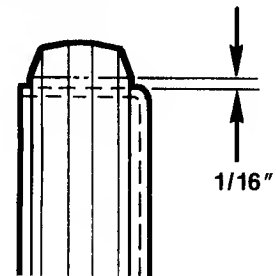
## CLUTCH SYSTEM

Both brake and clutch functions are controlled by the same pedal. Pushing the pedal about halfway down disengages the clutch. Pushing it all the way down engages the brake.



### Checking

If rubber on driven disc (1) is worn down to  $1/16''$  or less do not attempt adjustment. Replace the disc. NOTE: See page 3-3 for driven disc wear analysis.



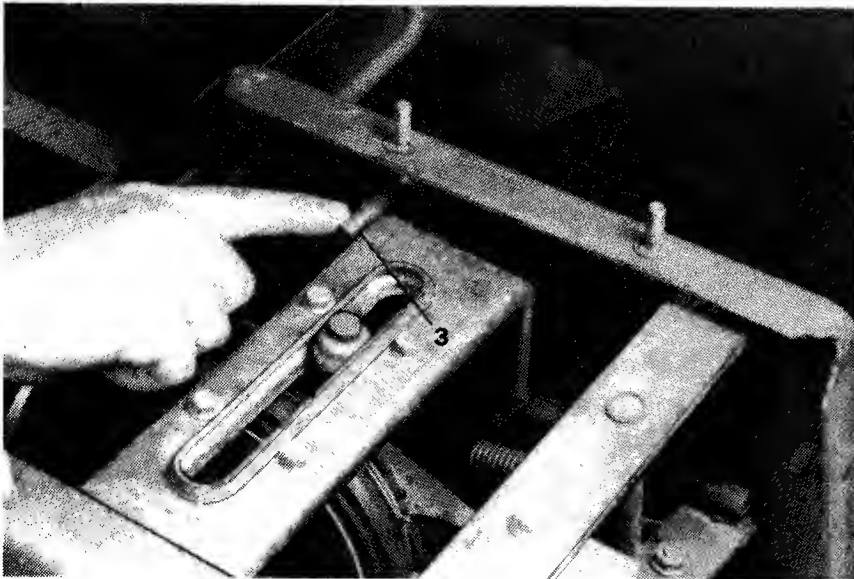
### Replacement

Replace the rubber driven disc when excessively worn or when unevenly worn.

- ☐ Remove the rear cover plate.
- ☐ Shift the drive into neutral.
- ☐ Remove the three nuts (2) from the hub.
- ☐ Remove the old disc and replace it with a new disc.

### Adjustment

- ☐ The stop pin (3) should be positioned  $3/16''$  from the forward edge of the shift yoke with a new disc installed.



Proper disc clearance assures that the driven disc will make contact with the drive disc up to the point where the rubber is worn below its minimum thickness. At this point the stop pin will prevent the driven disc from making contact with the drive disc and prevent damage through metal to metal contact.

# Brake/Clutch System

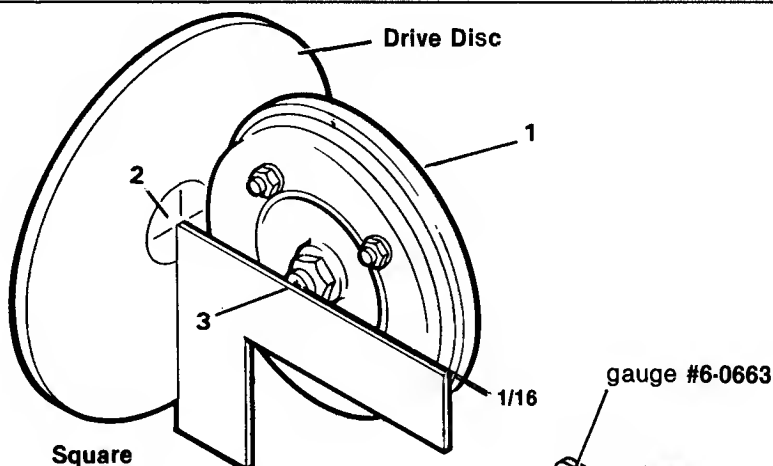
## CLUTCH SYSTEM

### Drive Disc Alignment

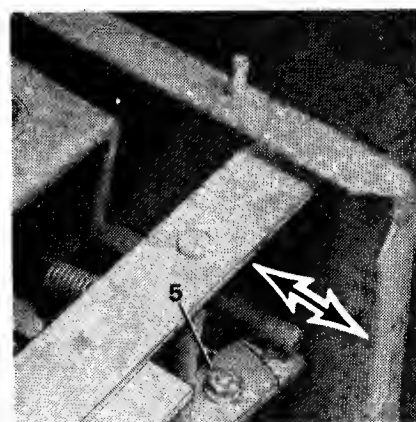
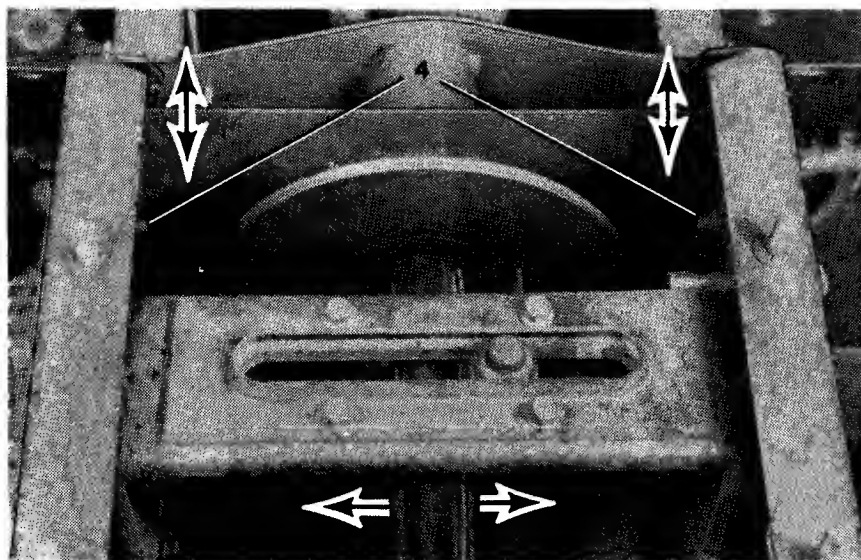
- ☐ Remove fenders & rear cover plate
- ☐ Shift to reverse to move driven disc (1) to right side of drive disc.
- ☐ Draw center marks on drive disc center button (2) using a suitable marker.
- ☐ Position square (3) against the center of drive disc. The straight edge from the square should be  $1/16$  inch below the center point of the driven disc input shaft as shown.
- ☐ To adjust, loosen six screws (4) retaining the bearing support to the slotted holes in the tractor frame. Tap the assembly up or down as required for proper alignment and tighten screws. Recheck after tightening.

### Shift Detent Adjustment

- ☐ Place the driven disc in the center of the drive disc. When centered if the shift handle is not in the neutral slot of detent, loosen the nut on the adjusting screw (5), place shift handle in neutral slot and retighten adjusting screw.
- ☐ Check adjustment by shifting to first speed and then to reverse. The driven disc should clear the drive disc button in both first and reverse.



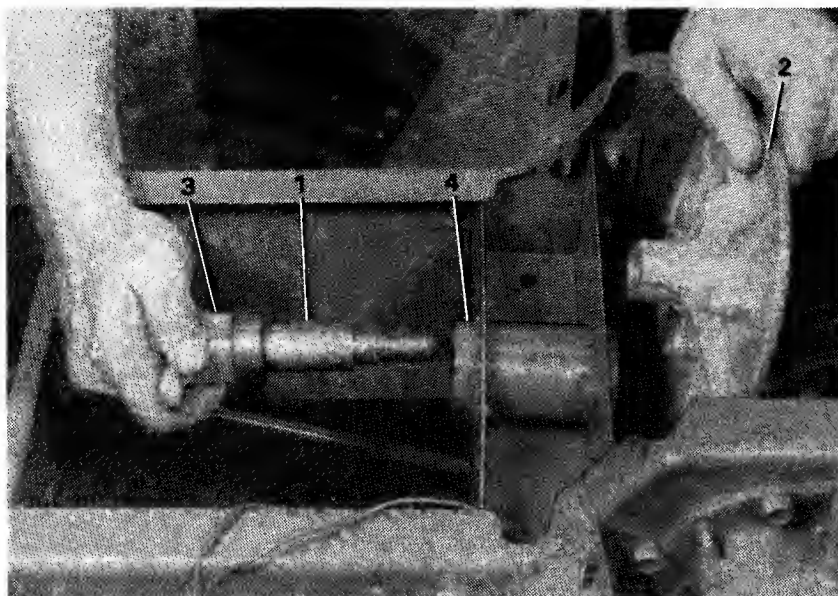
**Note**  
Snapper gauge #6-0663 shown here can be used as an alternate method of checking and setting drive disc alignment.



**Note**  
Fender is removed for clarity. Adjustment of the shift detent must be made with fender in place.

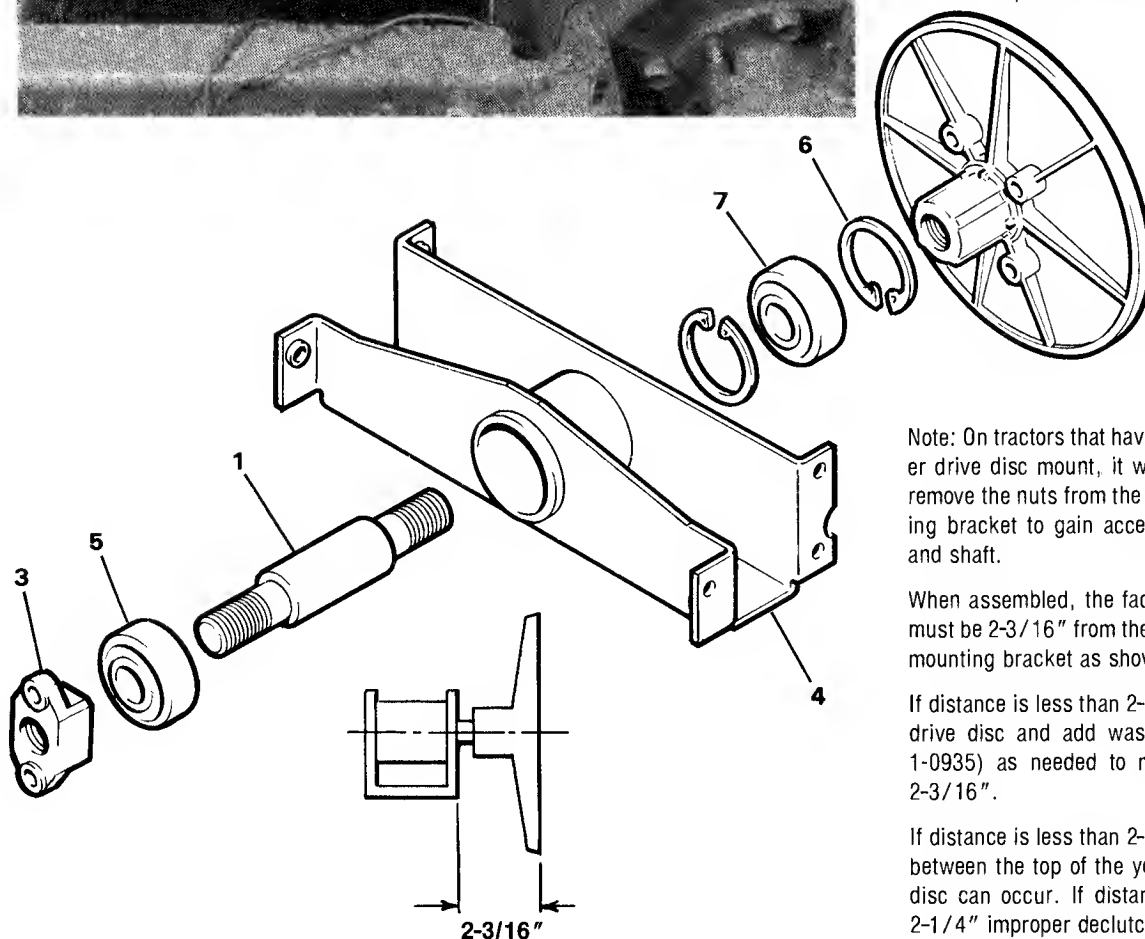
Disc alignment consists of the vertical position of the drive disc and the horizontal position of the driven disc. Both must be properly aligned for maximum efficiency.

## CLUTCH SYSTEM



### Drive Disc Removal

- ☐ Remove drive shaft (see drive shaft-removal)
- ☐ Unscrew spindle (1) from disc (2) by turning hub (3) clockwise (L.H. thread). Hold disc and tap hub using a mallet. Remove spindle and disc from support (4).
- ☐ Remove front ball bearing (5) by unscrewing hub from spindle. Clamp spindle in vice and tap hub off using a mallet (L.H. thread).
- ☐ Remove outer retaining ring (6) with internal snap ring pliers, and remove rear ball bearing (7).
- ☐ Inspect all parts and replace any part that exhibits signs of excessive wear or damage.
- ☐ Reverse procedure to reassemble.



Note: On tractors that have the bolted together drive disc mount, it will be necessary to remove the nuts from the bolts in the mounting bracket to gain access to the bearings and shaft.

When assembled, the face of the drive disc must be 2-3/16" from the rear surface of the mounting bracket as shown.

If distance is less than 2-3/16", remove the drive disc and add washers (part number 1-0935) as needed to make this distance 2-3/16".

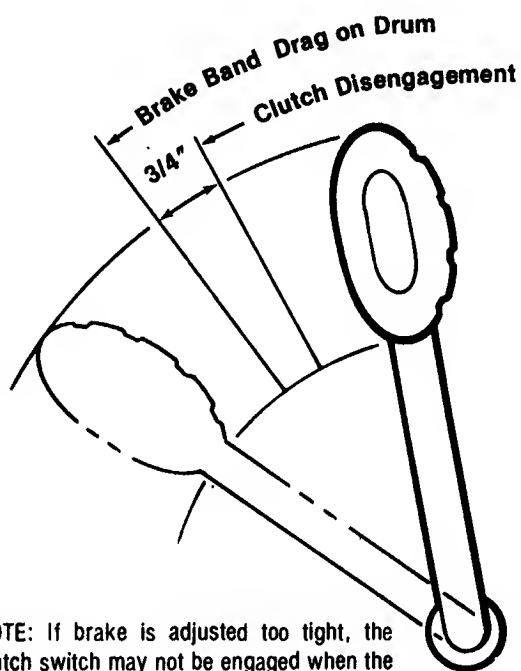
If distance is less than 2-3/16" interference between the top of the yoke and the rubber disc can occur. If distance is greater than 2-1/4" improper declutching can result.

**Drive Disc should be replaced if warped, damaged or excessively worn. Warpage can be checked for using a dial indicator. If the surface varies more than .020", the drive disc should be replaced. When replacing disc, check condition of ball bearing and bearing bores in bearing support.**

# Brake/Clutch System

## BRAKE SYSTEM

Both brake and clutch functions are controlled by the same pedal. Pushing the pedal about halfway down disengages the clutch. Pushing it all the way down engages the brake.



NOTE: If brake is adjusted too tight, the clutch switch may not be engaged when the pedal is depressed.

### Checking

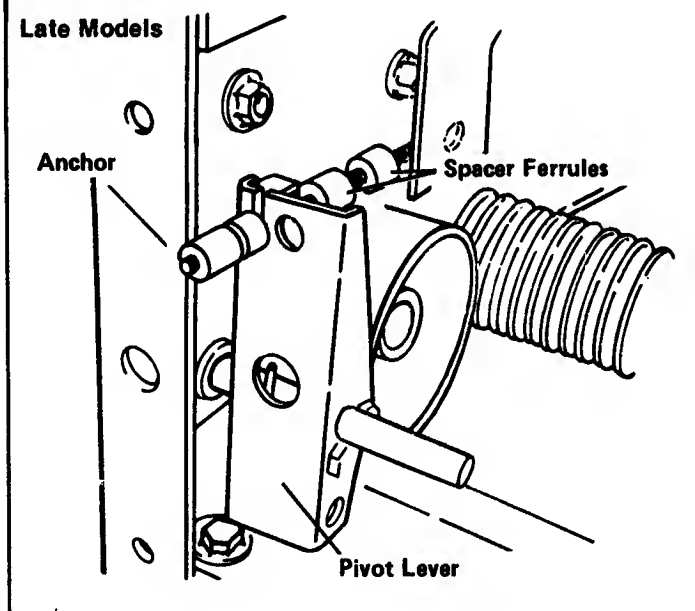
This check is made with the engine off and with the selector shift in gear (Hi or Lo). Attempt to roll the machine by depressing the clutch/brake pedal slowly. There should be a free place where the clutch is disengaged and the brakes are not yet applied. This should occur in the first half of the pedal travel. If braking is occurring too late in the pedal travel, adjustment is required.

### Adjustment (Earlier Models)

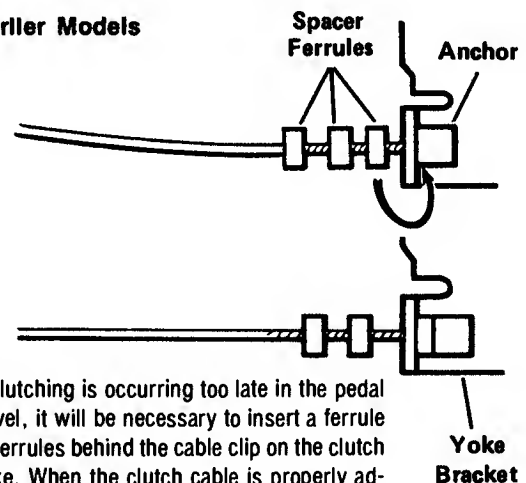
Loosen jam nut on the inside of the bracket and turn jam nut on the outside until proper braking is obtained.

### Adjustment (Late Models)

Brake adjustment is made by tightening the brake cable by inserting a ferrule between the brake pivot lever and cable anchor.



### Earlier Models



If clutching is occurring too late in the pedal travel, it will be necessary to insert a ferrule or ferrules behind the cable clip on the clutch yoke. When the clutch cable is properly adjusted, there should be approximately 1" of slack in the cable. (Total of 1" up and down movement midway between yoke and clutch pedal.)

The brake is engaged by depressing the pedal beyond the clutch range. There should be about  $3/4"$  pedal travel between the point where the clutch disengages and braking begins.

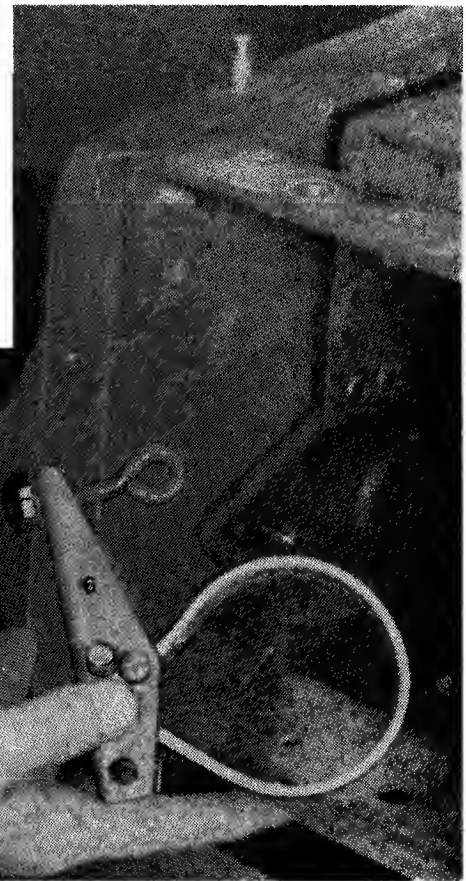
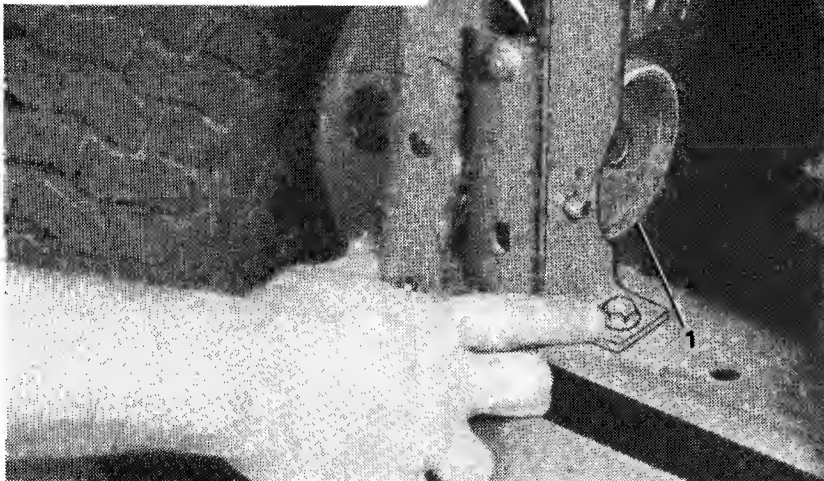
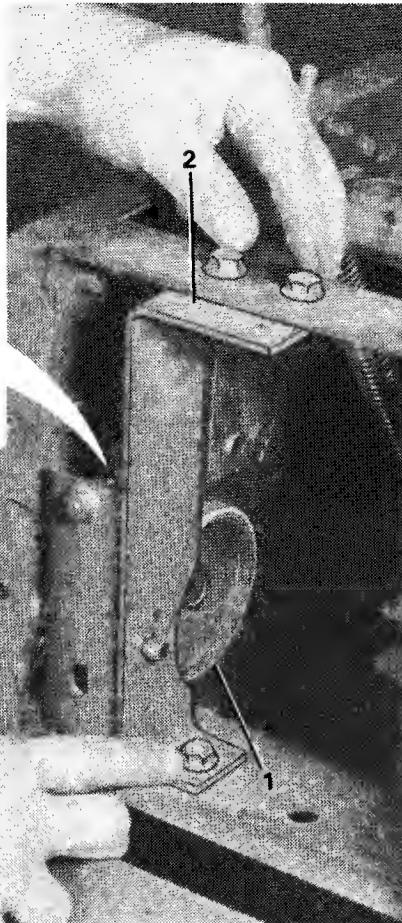
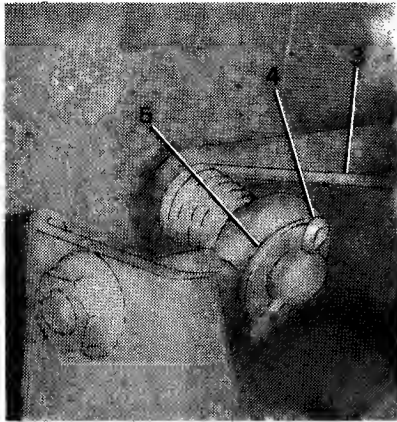
## BRAKE SYSTEM

### Overhaul

#### REMOVAL

Remove brake drum (1) by removing 5/8-18 jam nut.

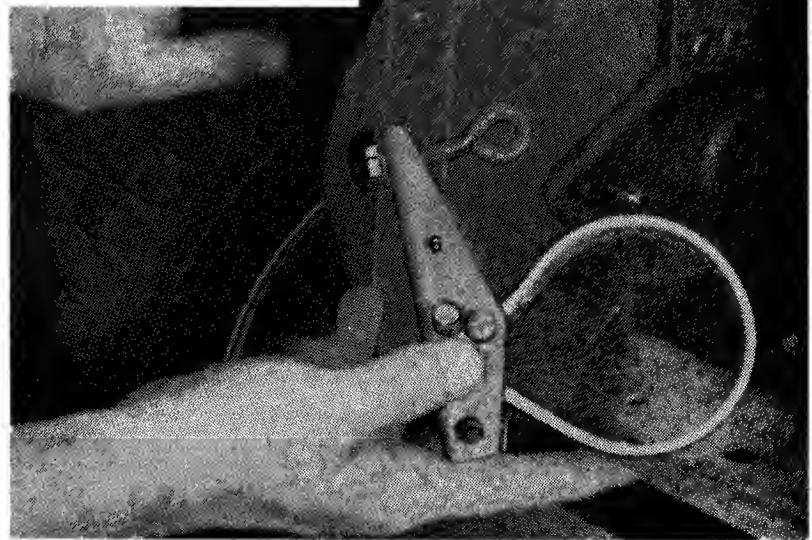
Remove Brake Pivot Support (2) from between Upper cross strap and Lower cross strap. Unlatch torsion spring (3) and remove cotter pin (4) and flat washer (5) from brake link. Brake Assembly (6) can now be removed.



#### INSPECTION AND REPAIR

Check brake band lining. Replace band if lining is badly worn, oil soaked or damaged.

Install brake band on the drum to check that it makes full contact with the drum and that the brake pivot lever works freely.



**Brake band should be replaced when lining is worn to 1/16" or less.**

## This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

## SECTION INDEX

	page
DESCRIPTION	2
PRINCIPLE OF OPERATION	2
ENGINE	
Removal	4
Installation	4
DRIVESHAFT	
Removal	5
Inspection	5
Installation	5
TRANSMISSION	
Removal	6
Disassembly	8
Cleaning and Inspection	10
Subassembly Overhaul	11
PRIMARY CHAIN CASE	
Removal	14
Disassembly	14
Cleaning and Inspection	15
Assembly	15
RIGHT REAR AXLE	
BEARING REPLACEMENT	15

# Drive Train

---

## DESCRIPTION

The tractor drive provides 12 forward speeds and 2 reverse speeds. This is due to friction disc system of 6 forward positions and 1 reverse position coupled with a dual range transmission. This exclusive feature provides on-the-go shifting through 6 forward speeds without having to clutch or stop.

## PRINCIPLE OF OPERATION

Power is delivered to the drive disc by a drive shaft from the engine. Another disc, called a driven disc, rides against the drive disc which in turn drives the primary chain. The hexagonal drive tube of the primary chain case delivers power to the transmission. The multiple speed selection of the friction disc system is accomplished by the movement of the primary chain case along the hex tube. Shifting causes the case mounted driven disc to change its position on the drive disc.

When in 1st speed the driven disc is just left of center button on the drive disc. This is the slowest rotating speed of the driven disc. As the driven disc is shifted further to the left and makes contact with a larger circumference of the drive disc its rpm increases while engine rpm remains constant.

When in the neutral position the driven disc makes contact with the center button of the drive disc. The center button is mounted in a ball bearing and does not rotate when driven disc is against it.

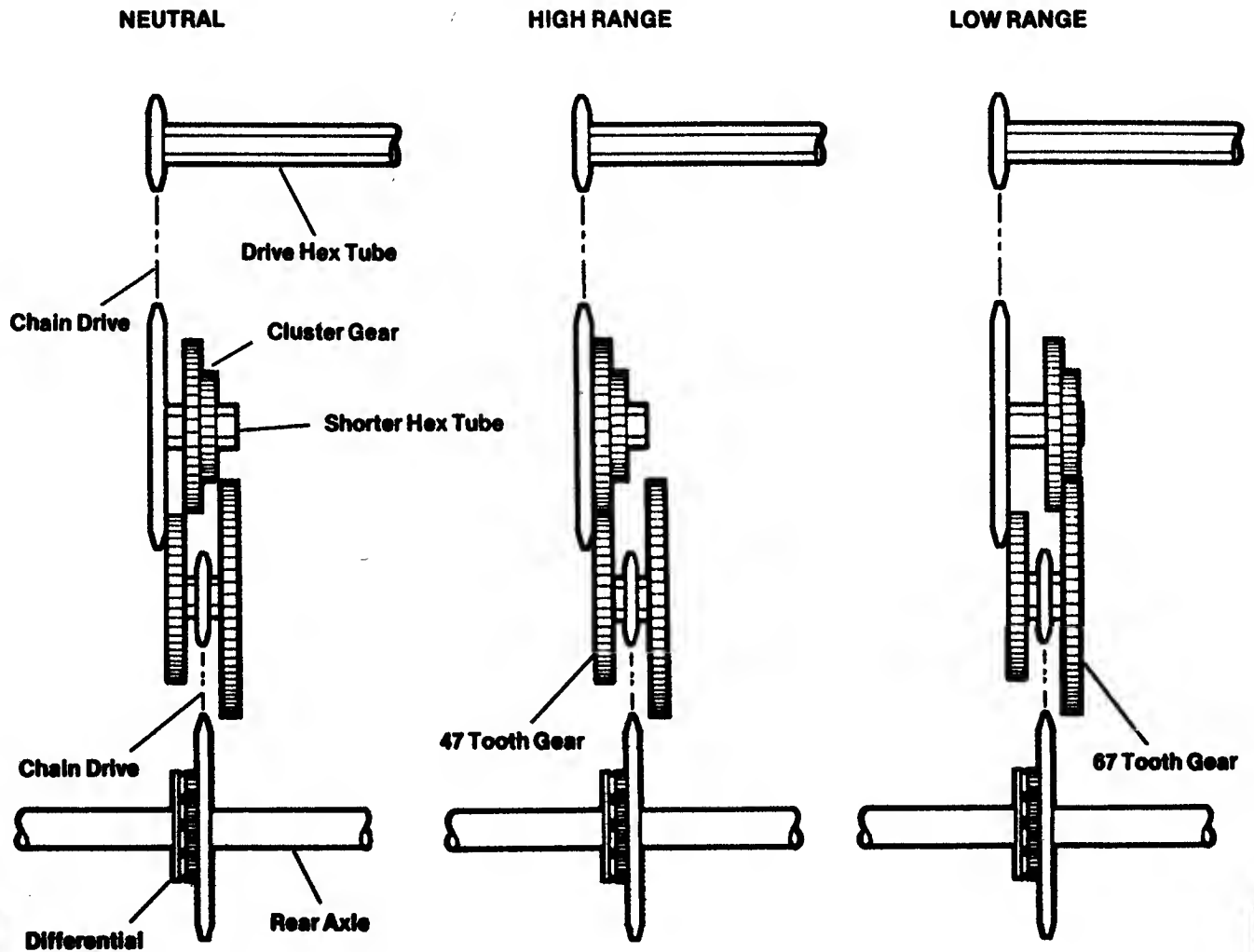
When in reverse position the driven disc is to the right of the center button on the drive disc. The driven disc rotates in the opposite direction that it rotated for forward speeds even though drive disc rotation is the same.

Power is delivered to the transmission by the drive hex tube from the primary chain case. Inside the transmission the hex tube drives a chain sprocket which is mounted on a shorter hex tube. Also mounted on this hex tube is a cluster gear which is able to slide back and forth and be shifted to either low or high range.

One of the two gears on the cluster meshes with one of two larger gears (67 tooth and 47 tooth) which transmits power by chain drive to the rear axle.

The rear axle is equipped with a differential to allow one rear wheel to travel a longer distance than the other when making turns. This feature greatly reduces lawn damage.

### Transmission Hi/Lo/Neutral Gear Arrangement



# Drive Train

## ENGINE

The procedures outlined here are for removing the engine from the tractor. For information concerning repair or overhaul consult the engine manufacturer's Service and Repair Instructions manual.

### Removal

☐ Disconnect hood stop cable and headlight wire and remove hood from tractor.

☐ Disconnect battery cables (1) from battery terminals.

**WARNING:** Always disconnect negative cable first and reconnect it last to prevent sparks if positive post is accidentally grounded to frame by a tool.

☐ Disconnect engine to driveshaft coupling (2), refer to "Drive shaft-Removal."

☐ Disconnect ground to coil red wire (3). Unplug the purple alternator wire (4) and the orange electric clutch wire (5). Remove belt from clutch.

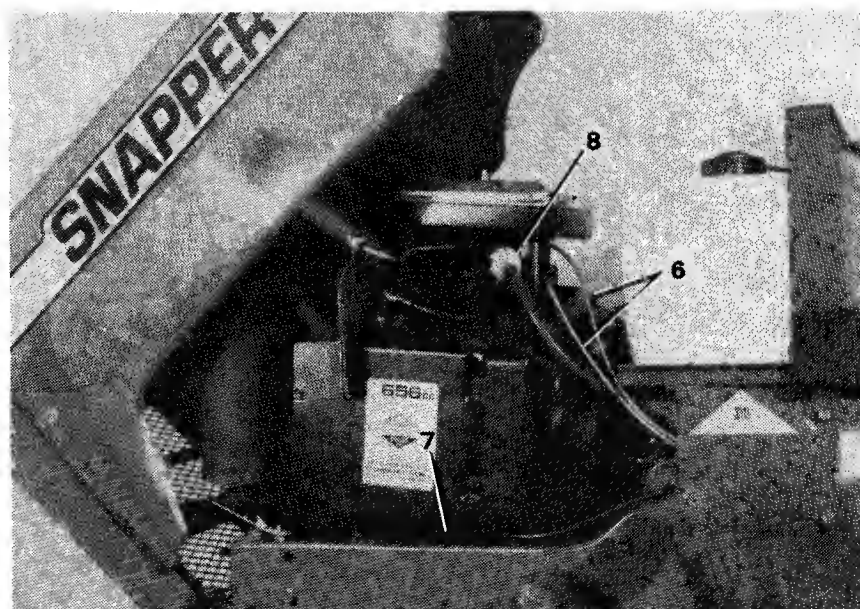
☐ Disconnect throttle control cable (6) at carburetor and choke cable.

☐ Disconnect starter cable (7) at starter motor terminal.

☐ Remove hose (8) from fuel filter.

☐ Remove engine mounting bolts from tractor engine base.

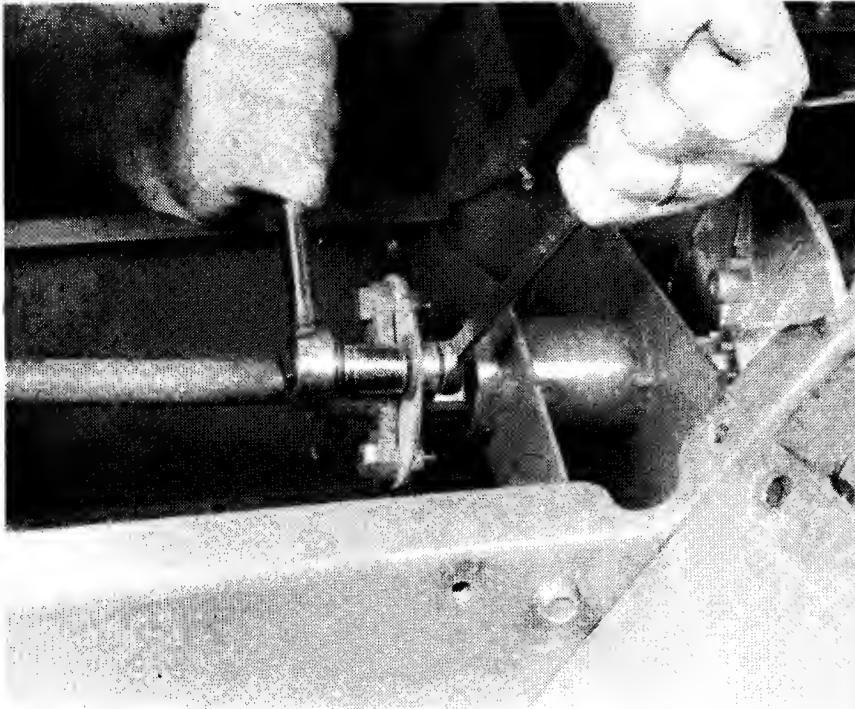
☐ Using a suitable lift, connect hook from lift to lifting bracket and remove engine.



### Installation

The procedures for engine installation are the reverse of the instructions above.

## DRIVE SHAFT

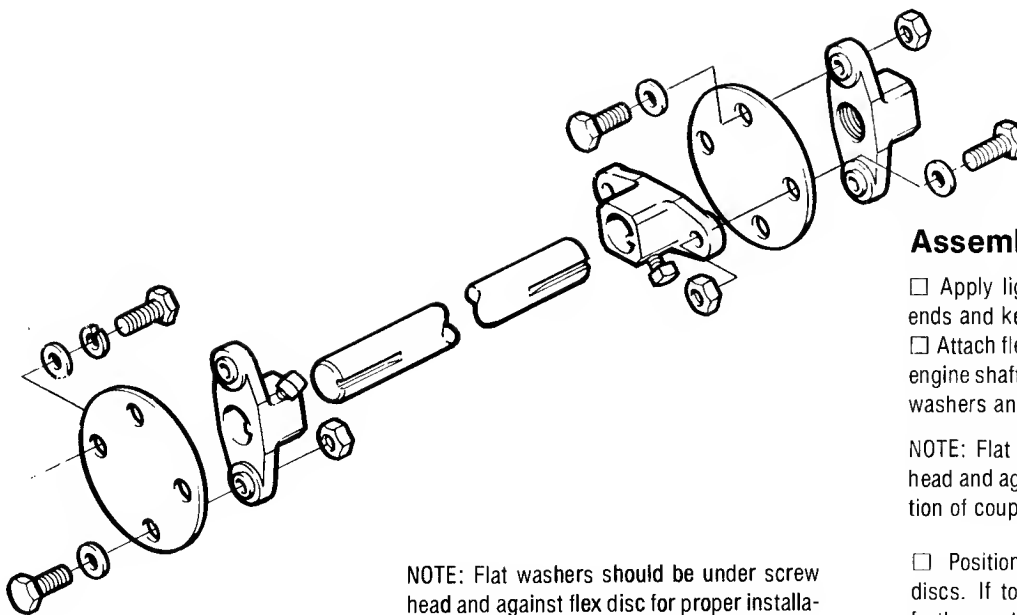


### Removal

- ☐ Remove console cover to gain access to rear end of drive shaft.
- ☐ Remove bolts that hold the flex coupling disc to the hub on drive disc spindle.
- ☐ Remove bolts that hold the flex coupling disc to the engine output shaft.
- ☐ Slide drive shaft out from between engine output shaft and drive disc spindle hub. Remove drive shaft from tractor.
- ☐ Remove flex coupling discs from each end of drive shaft.
- ☐ Remove hub from each end of drive shaft. Hubs are keyed in place.

### Inspection

- ☐ Check shaft for straightness and condition of keyways in ends of shaft. Replace shaft if required.
- ☐ Check hub for cracks. Check condition of key and threads of set screw.
- ☐ Examine flex coupling discs for damage and cracks. Check holes in discs, replace discs if holes are elongated.



NOTE: Flat washers should be under screw head and against flex disc for proper installation of couplings.

### Assembly

- ☐ Apply light coat of grease to drive shaft ends and keyway before installing hubs.
- ☐ Attach flex disc drive disc spindle hub and engine shaft hub using locknuts with the flat-washers and screws.

NOTE: Flat washers should be under screw head and against flex disc for proper installation of couplings.

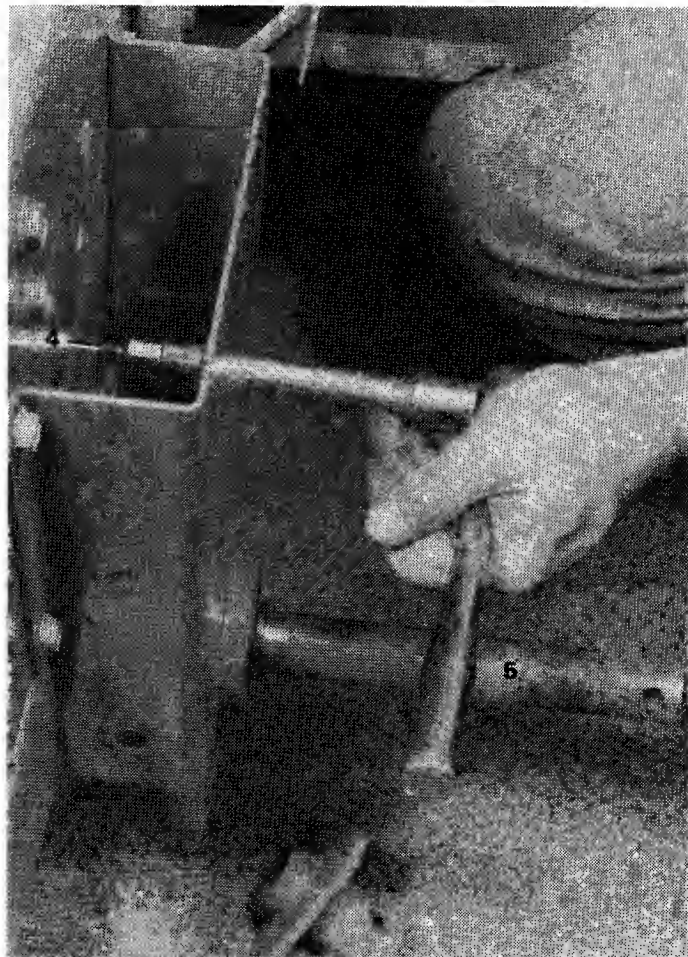
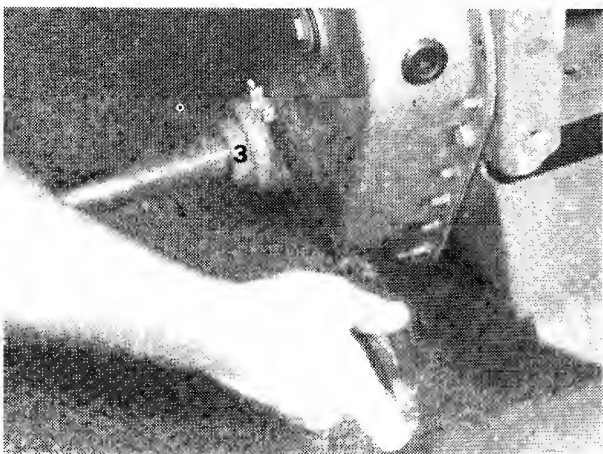
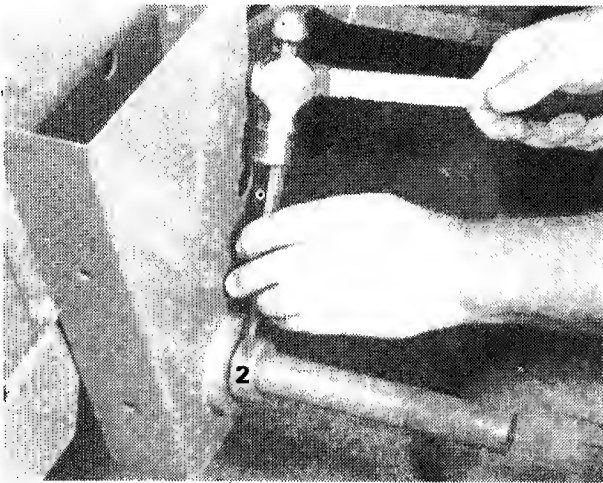
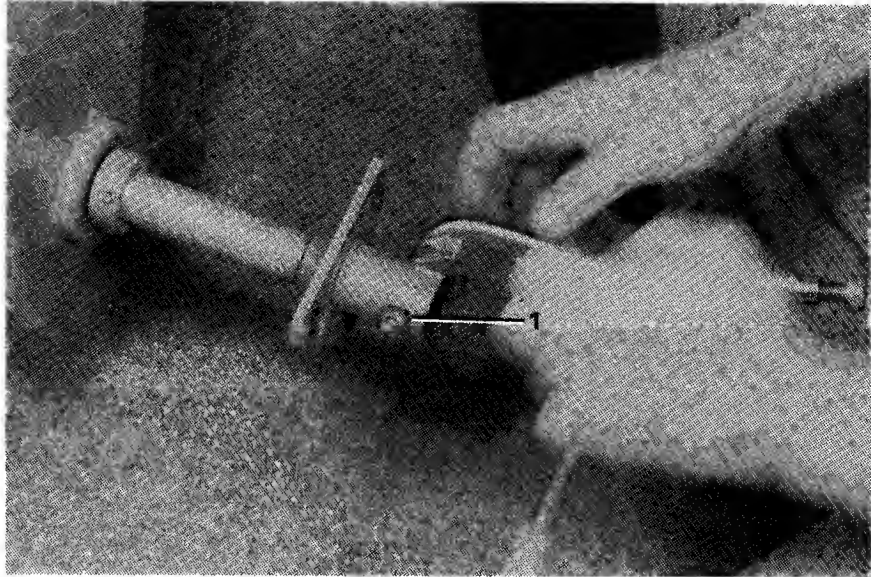
- ☐ Position drive shaft between coupling discs. If too long, shorten by sliding hubs further on to shafts. If too short lengthen by pulling hubs out slightly.
- ☐ Tighten set screws to 15 ft lbs.

# Drive Train

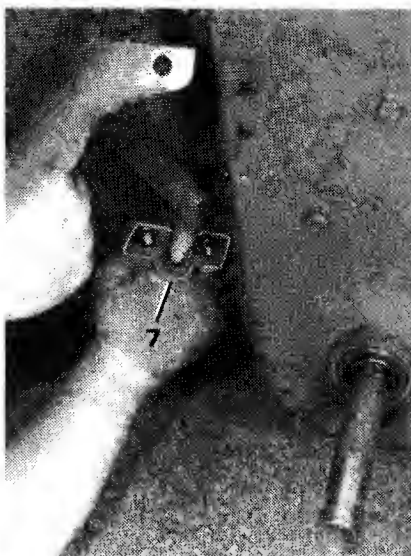
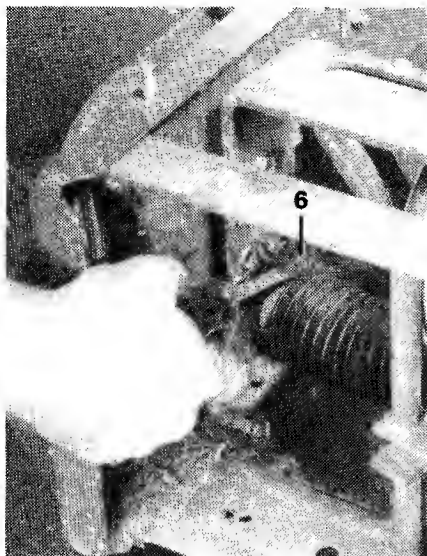
## TRANSMISSION

### Removal

- ☐ Remove rear console panel and fenders.
- ☐ Remove Brake Drum (Refer to " Brake-Overhaul," section 6).
- ☐ With rear frame of tractor on jackstands, remove rear wheels.
- ☐ On right end of rear axle, remove tapered pin (1) from Hub and remove Hub from axle.
- ☐ Loosen set screws in Lock Collar (2). Punch collar in reverse rotation to remove.
- ☐ If transmission is to be disassembled, remove hub on left side as well. Remove Boot Clamp (3) to remove Dust Seal Cap, Oil Seal, and Lock Collar. Left side also requires collar to be punched off in reverse rotation.
- ☐ Remove screw (4) from end off Drive Hex Tube.
- ☐ Clean end of shaft (5) to ease removal of shaft through ball bearing.



## TRANSMISSION

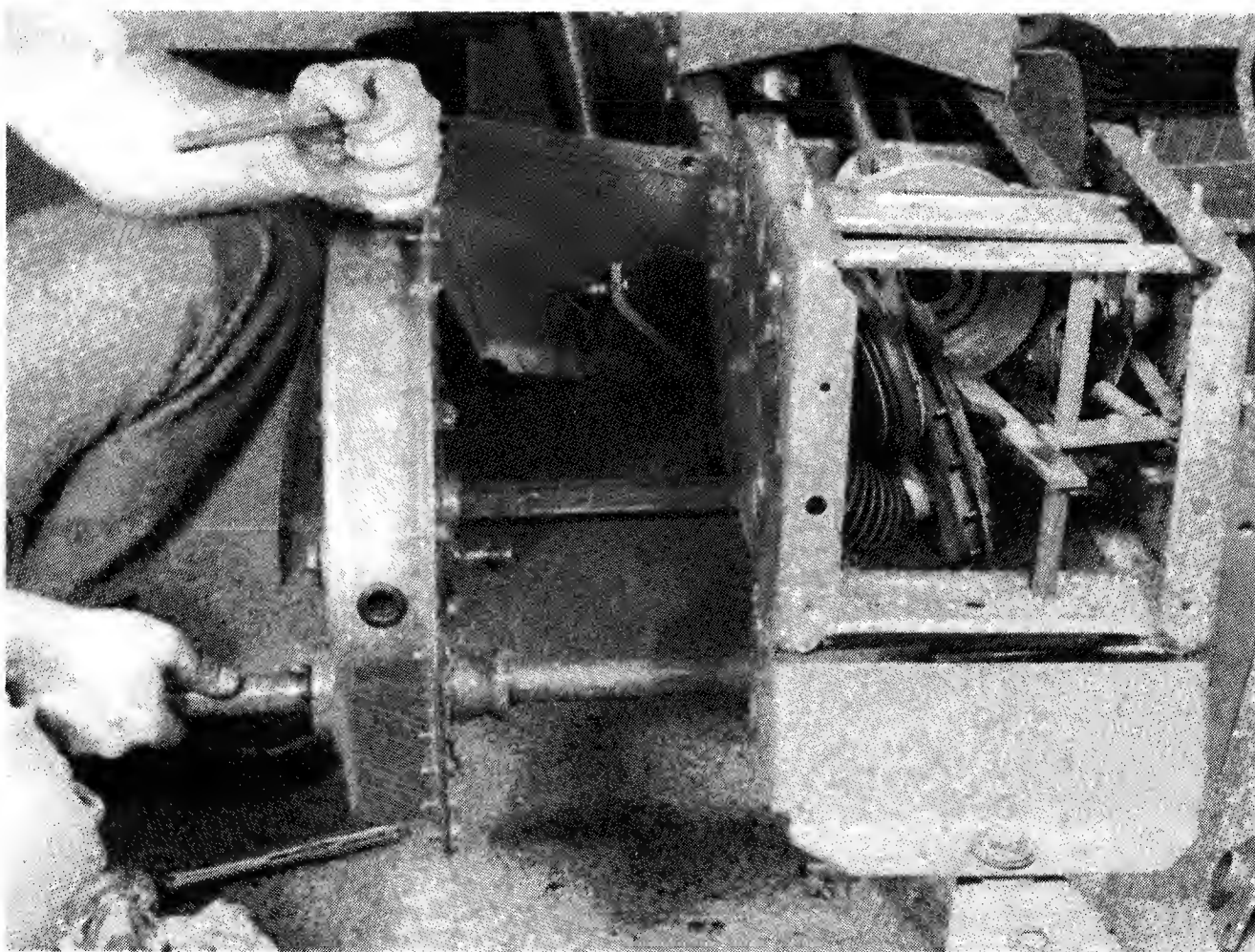


☐ Loosen Boot Clamps (6) at each end of hex tube.

☐ Remove rear lift (7) Hanger Bracket from underside of tractor to avoid interference with flange of transmission during removal.

☐ Remove the self tapping screws which secure the transmission to the tractor.

☐ Grasp the axle and the range shift lever and pull transmission away from tractor. Spacer and thrust washer may fall into right hand boot when transmission is pulled.

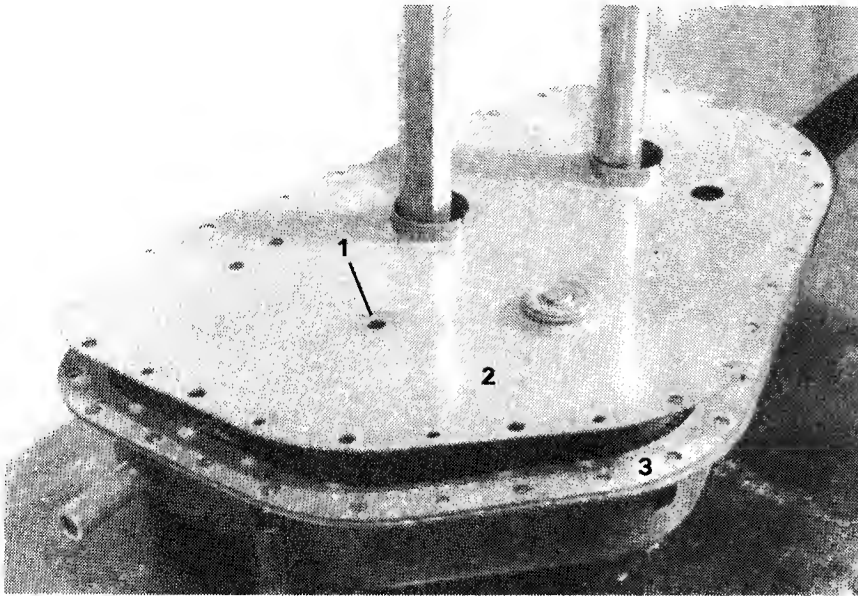


# Drive Train

## TRANSMISSION

### Disassembly

Disassembly of the transmission is more easily accomplished if the transmission case can be laid flat, cover side up. This requires a 2" hole in the work surface to accommodate the axle.

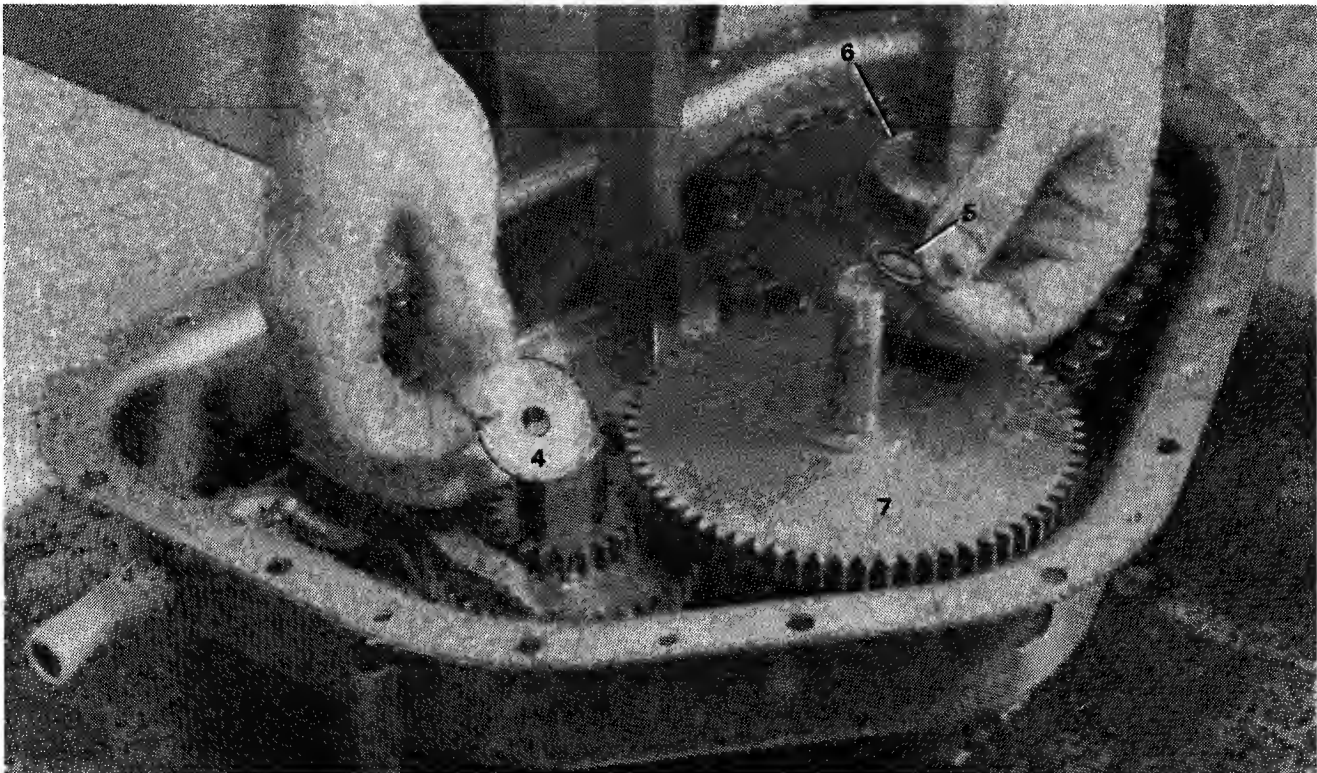


☐ Remove one nut (1) and remaining screws, securing cover to case. Remove cover (2) and cover gasket (3).

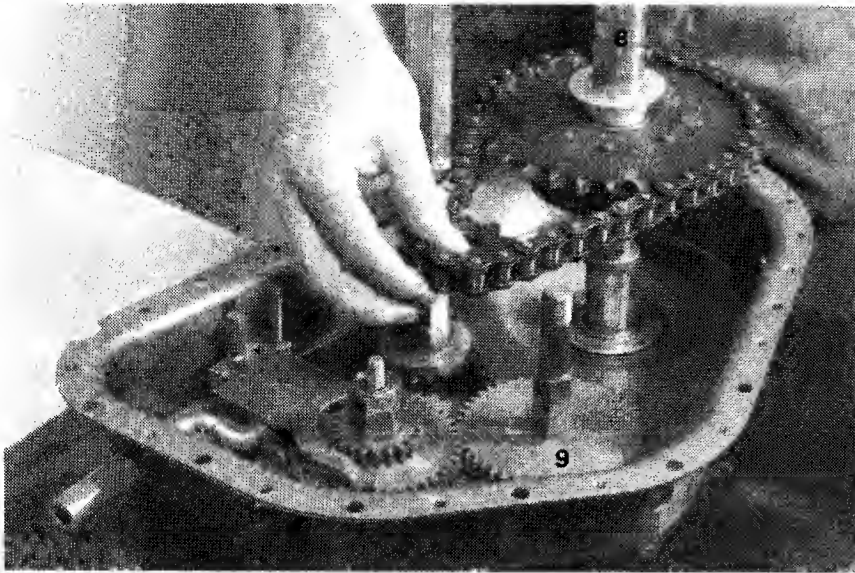
☐ Remove hardened steel thrust washer (4) from short hex shaft and shim washer (5) from Third Reduction Shaft.

☐ Remove special (white nylon) washer (6) from axle.

☐ Remove low range gear (7) by lifting it off of third Reduction Shaft.



## TRANSMISSION

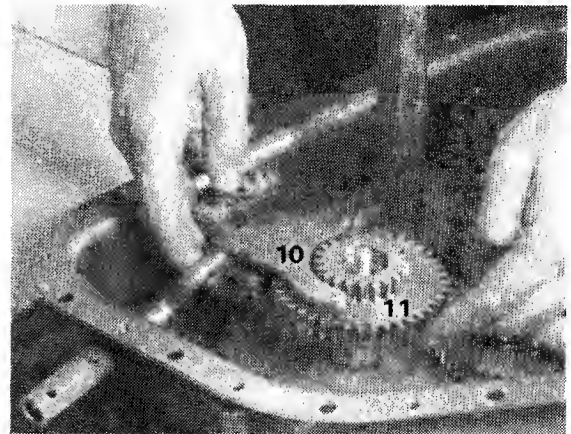


□ Lift axle and small drive sprocket and chain (8) out as an assembly. Disconnect chain from the two sprockets. Refer to "Differential Subassembly."

□ Remove High Range Gear (9) by lifting it off of Third Reduction Shaft.

□ Lift out Hi-Lo Shifter Fork (10) along with cluster gear. Fork runs on two guide pins which have to be lifted out of locating holes in case. Remove assembly and separate cluster gear (11) from fork. Refer to "Hi-Lo Shifter Fork Subassembly."

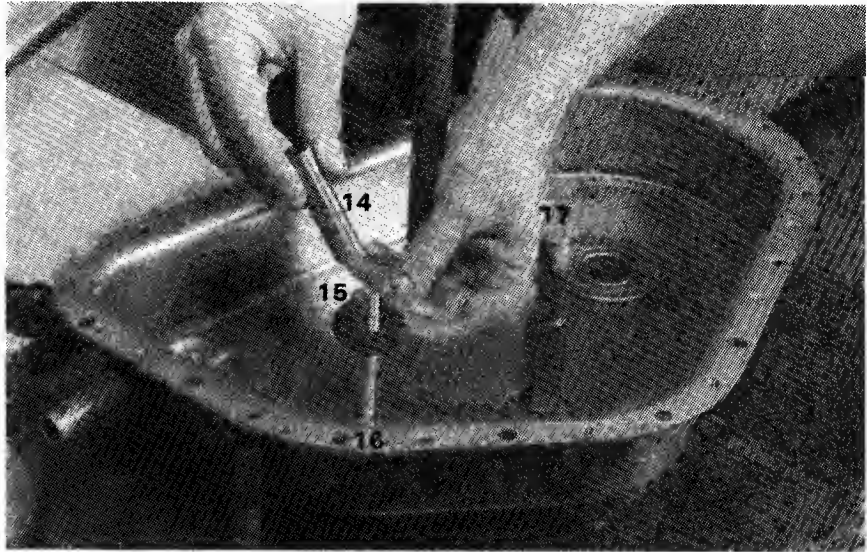
□ Lift Drive Hex Shaft and short hex tube and sprocket (12) and chain out as an assembly. Raise assembly until clear of inner support shaft (13). Disconnect chain from the two sprockets. Refer to "Short Hex Tube Subassembly."



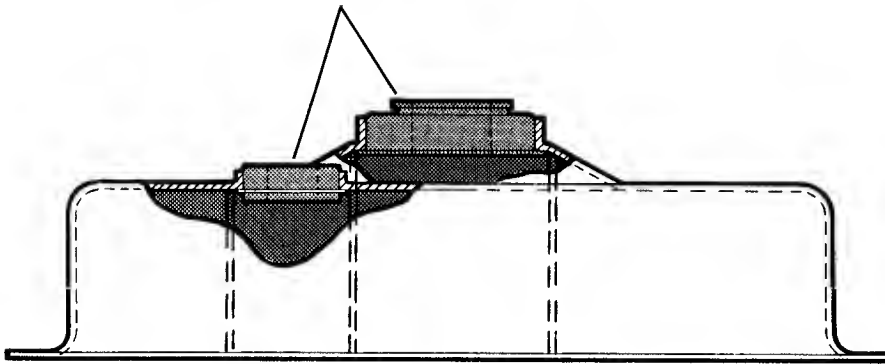
# Drive Train

## TRANSMISSION

- ☐ Remove Bearing Race (14) and bottom hardened thrust washer (15) from idler bolt (16). Remove idler bolt from case.
- ☐ Remove Third Reduction Shaft (17). Shaft (17) is secured to case by a screw with a flat-washer, special flat washer and lockwasher. Remove screw and pull shaft and shim from bearing in case.
- ☐ If Third Reduction Shaft cannot be pulled out, reinstall screw (5/16-18x3/4") and thread it in about 1/2". Tap head of screw with hammer to drive shaft from bearing.
- ☐ Remove Drive Tube Support Shaft from case by removing the screw and lockwasher.
- ☐ Press Transmission case bearings from outside to remove.



Before pressing bearings from case, support the inside of the case to prevent distortion.

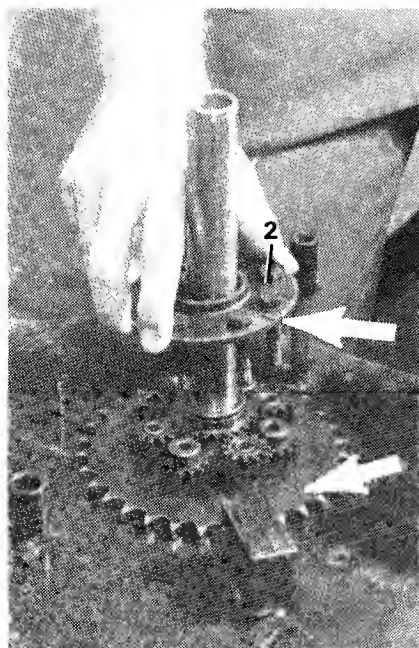
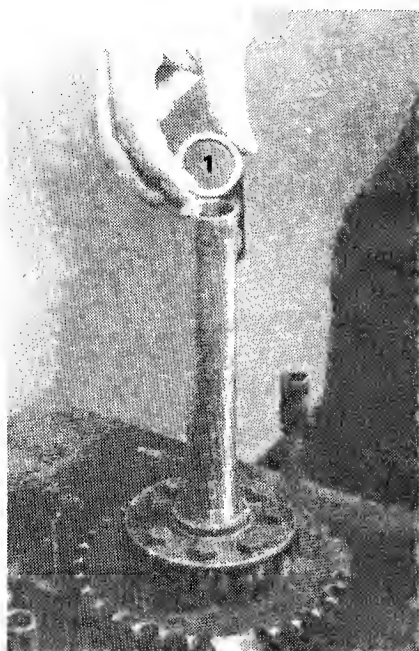


### Cleaning and Inspection

- ☐ Wash all parts except sealed bearings and nylon parts, in clean solvent to remove old lubricant, metallic particles, or dirt from surfaces. Dry all parts to remove cleaning solvent residue. Sealed bearings and nylon parts should be wiped clean with shop rags.
- ☐ Inspect all gear teeth for signs of excessive wear or damage. Inspect all thrust washers, special washers and shim washers for evidence of excessive wear, distortion or damage. Replace if necessary.
- ☐ Inspect case and cover for damaged mating surfaces or distortion. Replace cover or case if cracked, distorted or otherwise damaged beyond repair. Check for burrs and deep scratches or nicks on the gasket and oil seal surfaces.
- ☐ Inspect hex tubes for burrs and nicks. Gear and sprocket hubs must slide freely on these tubes. Replace any part that cannot be repaired or exhibits excessive wear.
- ☐ Inspect drive chains, refer to "Drive Chains" in Troubleshooting Section.

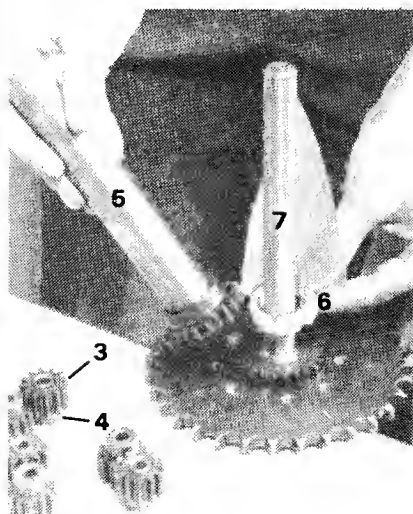
## SUBASSEMBLY OVERHAUL— DIFFERENTIAL

To ease disassembly the large sprocket should lay flat with long end of axle through hole in work surface, as in the photos below. Here however, the work surface is a jig used to hold the transmission for disassembly.



### Disassembly

- ☐ Remove Bearing Spacer (1). Spacer could have slipped off axle when differential was removed from case.
- ☐ Loosen all eight special lock screws and lift plate (2) off axle. Note position of alignment marks on plate sprocket for re-assembly.
- ☐ Remove the eight pinion gears (3) and their spacers (4).
- ☐ Lift off short axle (5) and remove axle spacer (6).
- ☐ Pull axle from sprocket bore (7).



### Cleaning and Inspection

- ☐ Wash all differential parts thoroughly in clean solvent to remove old lubricant, metallic particles, or dirt from surface.
- ☐ Inspect pinion gear and axle gear teeth for worn or broken teeth. Check pinion spacers for wear. Use a new pinion spacer, 2-1126, as a means of determining condition of used ones. Inspect nylon spacer for wear or damage. This spacer establishes proper position of the long and short axles. Replace any part that shows signs of wear or damage.

### Assembly

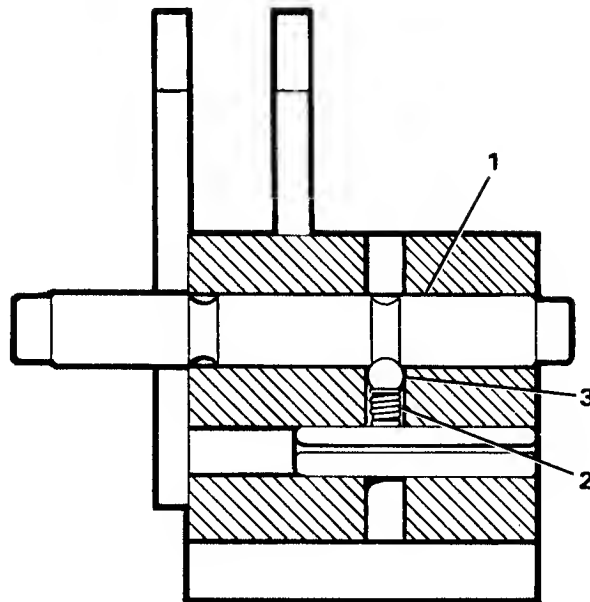
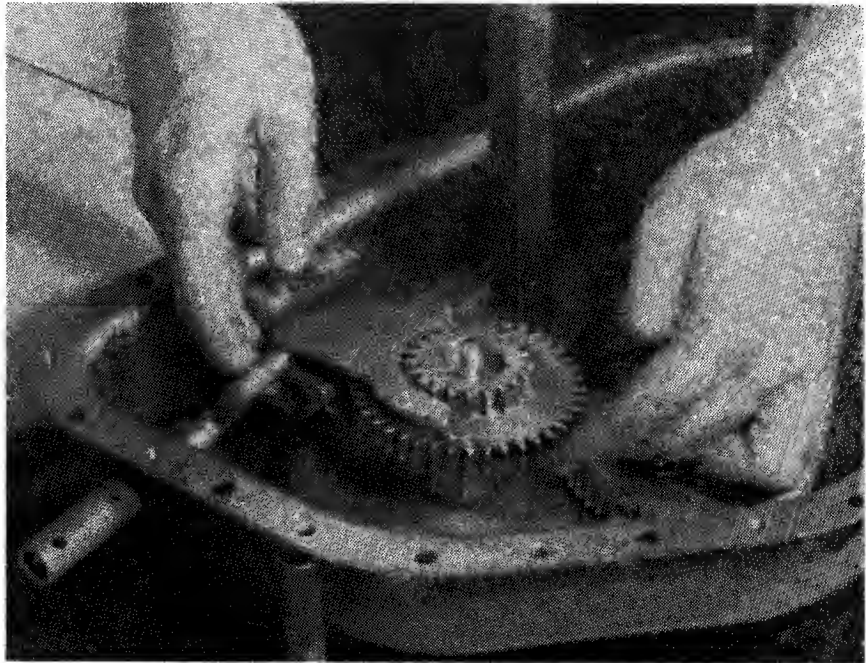
- ☐ Assemble differential in the reverse order. Prelubricate the end of long axle before installing short axle. Prelubricate pinion spacers before assembling pinion gears to spacers.
- ☐ Alternate pinion gears (gear on top—spacer on top) starting with alignment mark on sprocket centered between the two. Position plate so alignment mark on plate matches up with mark on sprocket.
- ☐ Use new capscrews, 1-2333. These misaligning thread type locking screws are intended for one time use only. Tighten 18 to 25 Ft. Lbs.

# Drive Train

## SUBASSEMBLY OVERHAUL— HI-LO SHIFTER

The shift fork runs on two guide pins one of which is a detent pin. The detent mechanism consists of a ball and spring which can be replaced if mechanism does not work properly.

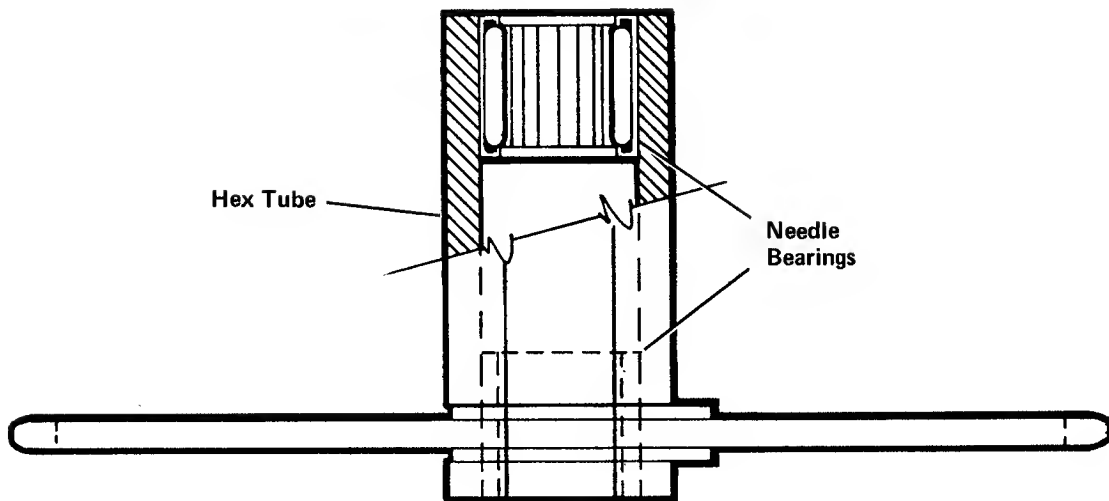
- ☐ Pull out detent pin (1) from assembly and allow the spring (2) to release the ball (3) against a rag. Remove ball and spring.
- ☐ Clean detent pin and bores in shift fork and dry out bore using compressed air. Check pin for scratches, nicks or excessive wear which could cause poor shifting.
- ☐ Inspect shift fork. If forks are spread too wide for proper gear retention it should be replaced.
- ☐ Prelubricate detent pin and insert into shift fork to check for smooth operation. Replace shift fork or pin if necessary.
- ☐ Position detent pin in shift fork just short of spring and ball bore. Insert spring and then ball.
- ☐ Push down on ball with a punch to compress spring and push detent pin in over top of ball and remove punch as detent pin is inserted.



## SUBASSEMBLY OVERHAUL— SHORT HEX TUBE



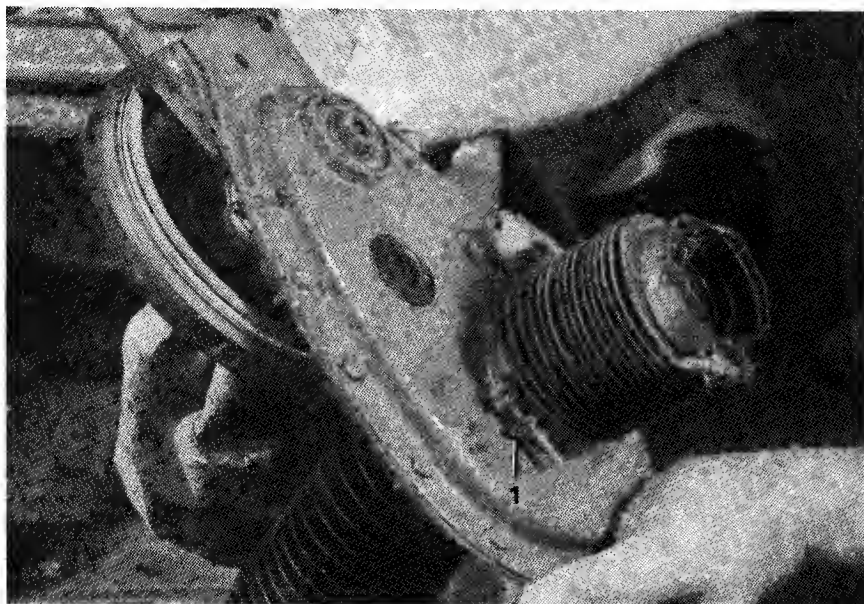
- ☐ Place subassembly in vice with brass jaws. Remove needle bearings using brass drift and hammer, if required.
- ☐ Install new bearings and press fit flush with ends of hex tube. Always press against end of bearing with writing on it.



# Drive Train

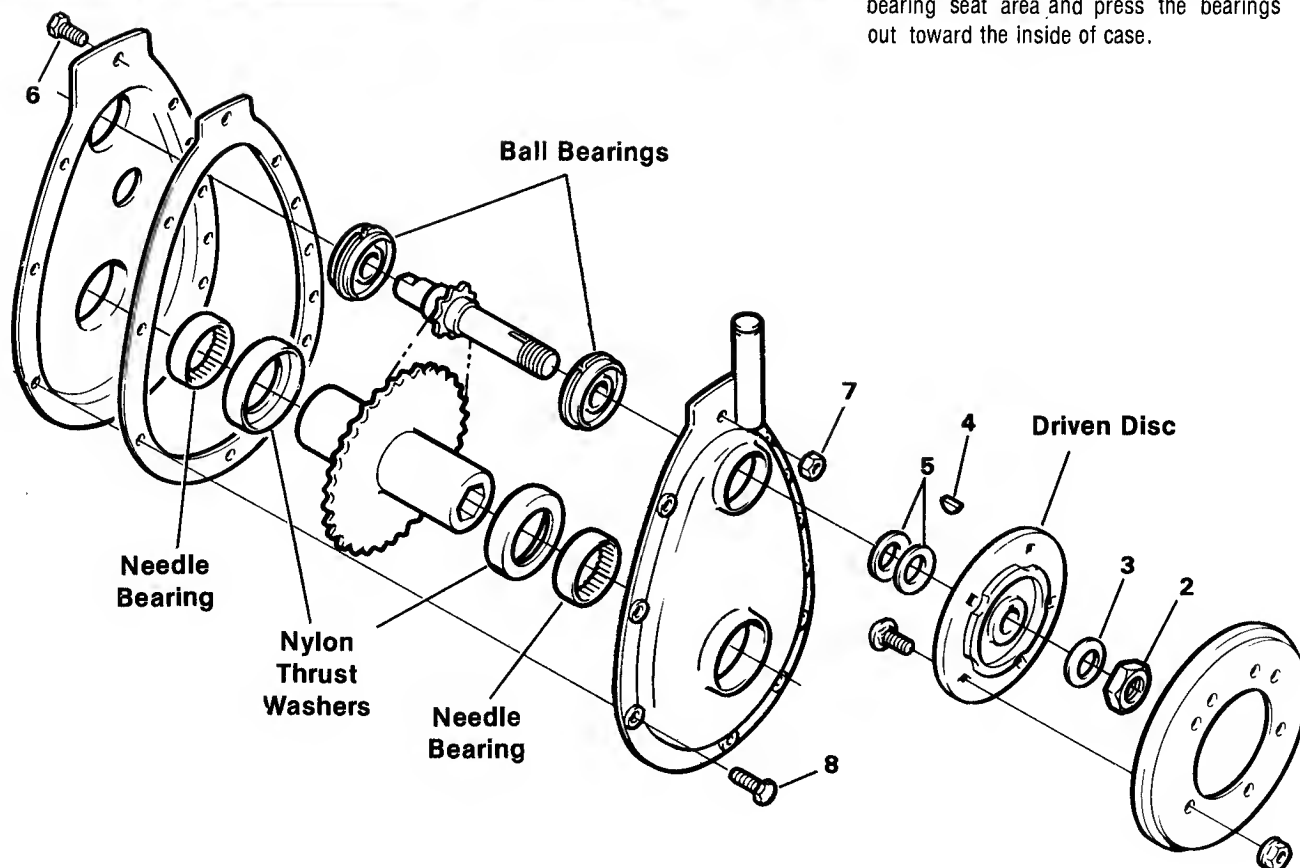
## PRIMARY CHAIN CASE

Removal (See transmission removal)



### Disassembly

- ☐ Remove the oil seal boot from each side of chain case by loosening boot clamp (1) and sliding boot off case flange.
- ☐ Remove locknut (2) and bellville washer (3) and slide hub off the shaft. Remove woodruff key (4) and remaining bellville washers (5).
- ☐ Remove the one 1/4-20 screw (6) and nut (7) and ten self tapping screws (8) holding the case halves together.
- ☐ Separate the chain case halves. Remove gasket and discard.
- ☐ Remove the chain with sprockets out as an assembly.
- ☐ To remove the ball bearings and needle bearings place a round support under the bearing seat area and press the bearings out toward the inside of case.



## RIGHT REAR AXLE BEARING REPLACEMENT

### Cleaning and Inspection

- ☐ Wash all parts thoroughly in clean solvent. Be sure all old lubricant, metallic particles, dirt, or foreign materials are removed from the surfaces of every part. Dry all parts to remove cleaning solvent residue.
- ☐ Inspect chain and sprockets for signs of excessive wear or damage. Inspect threaded end of shaft and keyway for damage. Inspect hub of large sprocket; install hub on hex tube to check that it slides freely. Replace damaged parts as necessary.
- ☐ Inspect the case halves for cracks, damaged mating surfaces, stripped bolt threads, distortion, or oversized bearing bores. Make sure paint drain tab is closed.
- ☐ Inspect seating surfaces of chain case halves and remove any nicks, burrs or sharp edges that could interfere with and damage the replacement bearings during installation. Replace parts as required.
- ☐ Inspect needle bearings and ball bearings for freedom of movement. Inspect bearings and thrust washers for signs of wear or damage. Replace as necessary.
- ☐ Inspect oil seal boots for cracks or wear and replace if damaged in any way.

### Assembly

- ☐ Install the two ball bearings in the upper openings of the case and cover. Press the bearings in from the inside until the snap ring touches the case while supporting the outer case surfaces.
- ☐ Install the two needle bearings in the lower openings of the case. Press the bearings in from the inside (press against the lettered end of bearing).
- ☐ Install nylon thrust washers on each side of sprocket. Cup end of thrust washer toward sprocket.
- ☐ Assemble chain onto the two sprockets and install shafts through bearings in the case as a unit.
- ☐ Position new gasket on flange of case and align holes.
- ☐ Install cover on case and attach with ten self-tapping screws and one 1/4-20 screw and nut.
- ☐ Install oil seal boot on each side of case flange and tighten boot clamps.



- ☐ With rear frame of tractor on jackstands, remove right rear wheel.
- ☐ Remove tapered bolt (1) from hub and remove hub from axle. Clean shaft.
- ☐ Loosen set screw in Lock Collar (2). Punch collar in reverse rotation to remove.
- ☐ Clean end of axle to ease removal of bearing from axle.
- ☐ Remove four screws securing axle support and slide support and bearing from axle.
- ☐ Press bearing out from outside of support.
- ☐ Press replacement bearing in from the inside of support.
- ☐ Reverse procedure to assemble.

## This image shows a single page of white paper with horizontal black ruling lines. The lines are evenly spaced and run across the width of the page, typical of notebook or legal stationery. There are no margins, text, or other markings on the page.

# Steering and Front Axle

# 8

## SECTION INDEX

	page
DESCRIPTION	2
PRINCIPLE OF OPERATION	2
FRONT WHEEL BEARING REPLACEMENT	3
LEFT SPINDLE BEARING REPLACEMENT	4
RIGHT SPINDLE BEARING REPLACEMENT	5
FRONT AXLE PIVOT BEARING REPLACEMENT	6
STEERING GEAR OVERHAUL	7
TOE-IN ADJUSTMENT	8

# Steering and Front Axle

---

## DESCRIPTION

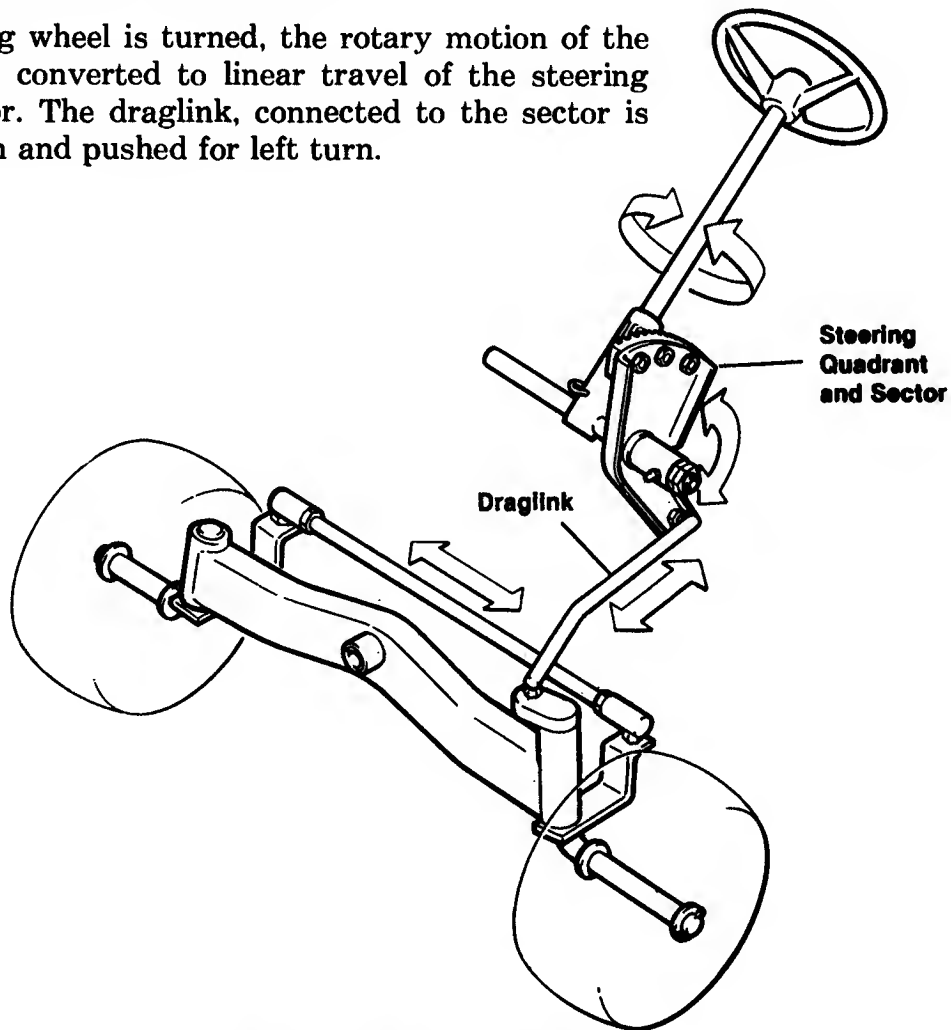
The steering linkage provides a direct connection between steering gear and front wheels. The Linkage consists of an inner rod connected to left and right wheel spindles and is adjustable at either side. A drag link connects the left spindle to the steering gear.

The steering gear is transverse mounted on the bearing support assembly of the steering shaft. This support is mounted on pivots to allow the operator to adjust the position of the steering wheel by changing the angle of the steering shaft.

The front axle is suspended from the underside of the tractor by one bolt and pivots on a journal to provide rigid independent front suspension.

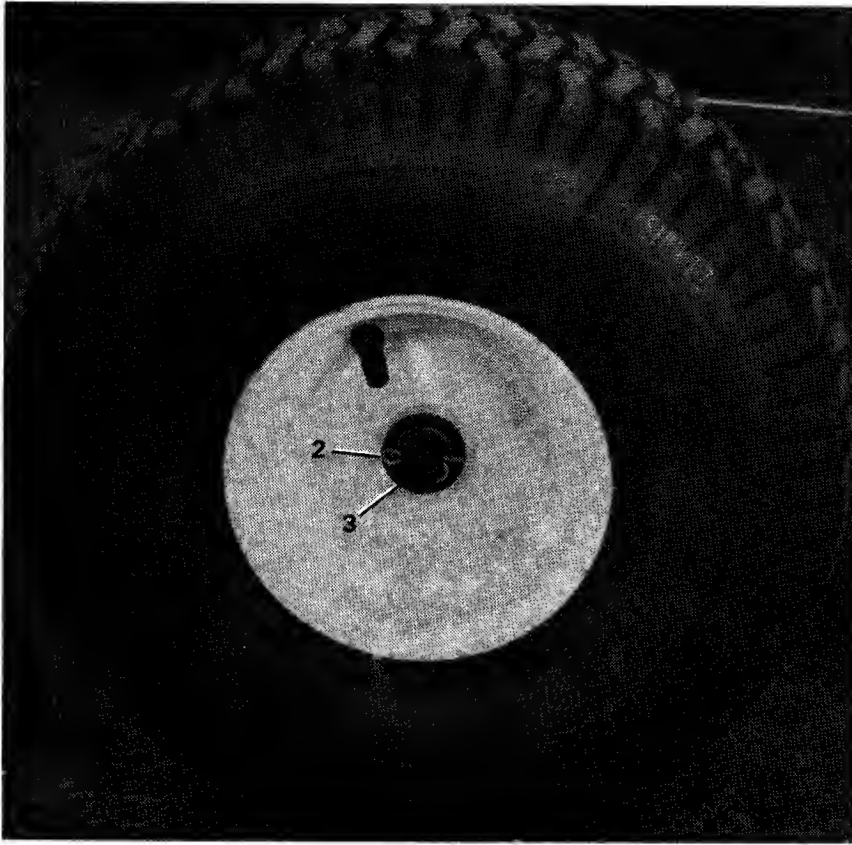
## PRINCIPLE OF OPERATION

When the steering wheel is turned, the rotary motion of the shaft and pinion is converted to linear travel of the steering quadrant and sector. The draglink, connected to the sector is pulled for right turn and pushed for left turn.



**Steering Gear Configuration**

## FRONT WHEEL BEARING REPLACEMENT



### Removal

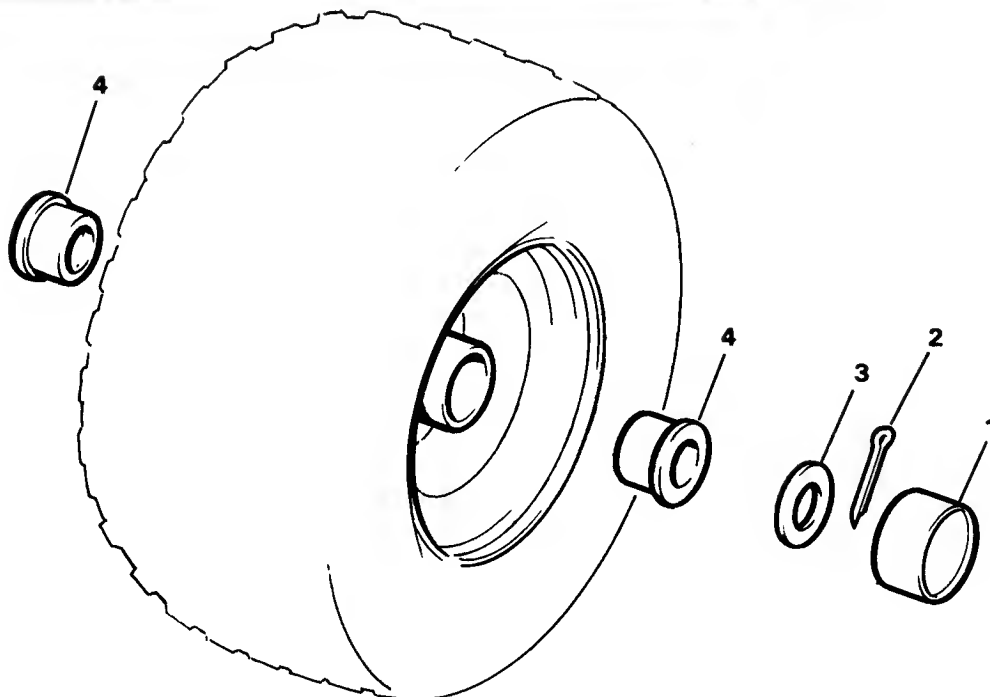
- ☐ Raise and support front end of tractor.
- ☐ Remove dust cap (1), cotter pin (2) and washer (3) from spindle.
- ☐ Slide off tire and rim assembly from spindle.
- ☐ Remove the wheel bearing (4). Tight bearings can be punched out from inside.

### Cleaning and Inspection

- ☐ Wipe out old grease from bearing bore of rim.
- ☐ Check bore for damage. Replace rim if damage cannot be repaired.
- ☐ Inspect condition of spindle; replace if damaged or excessively worn.

### Assembly

- ☐ Reassemble with new wheel bearings.
- ☐ Lubricate through lube fitting with bearing grease until grease comes out at bearings.



# Steering and Front Axle

## LEFT SPINDLE BEARING REPLACEMENT

### Removal

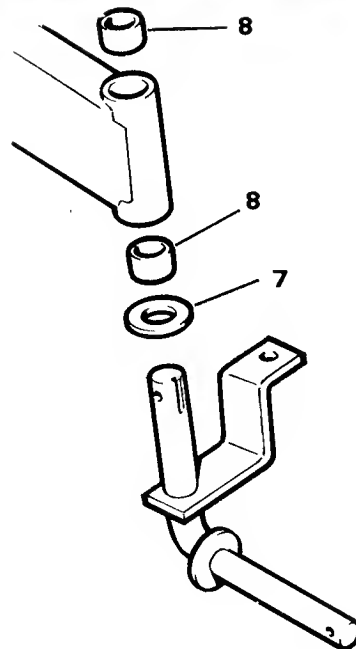
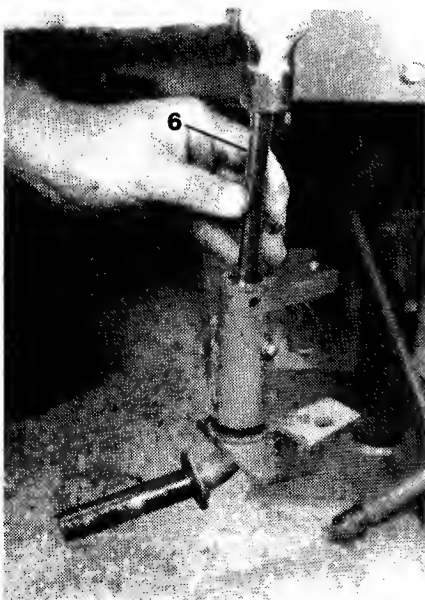
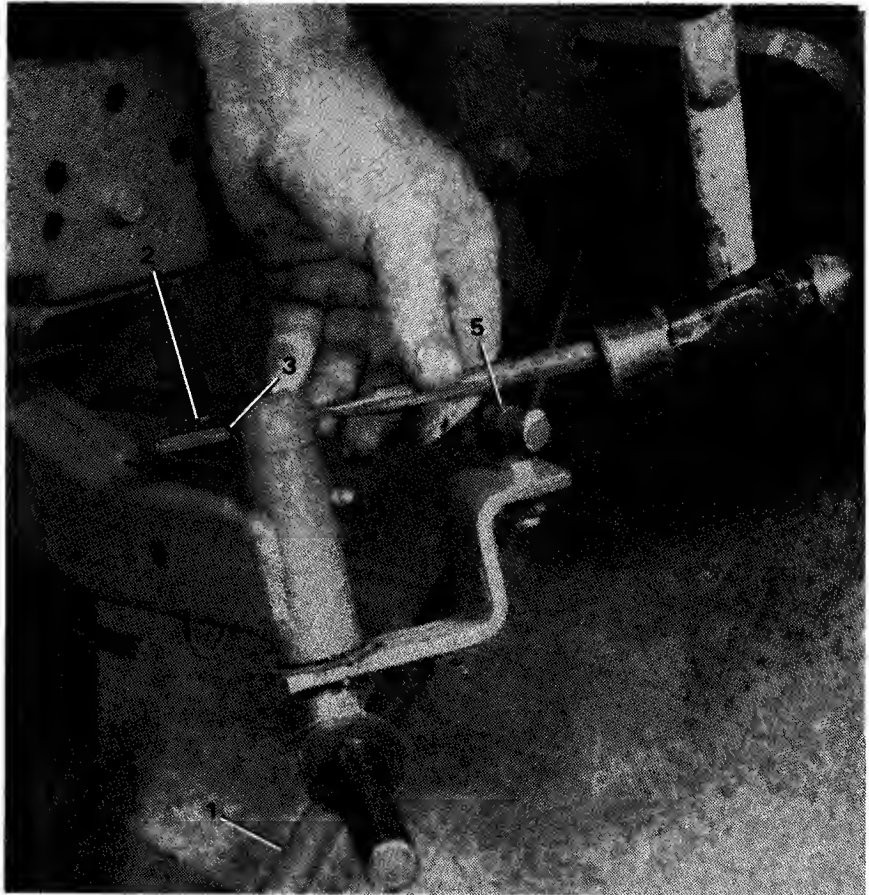
- ☐ Raise and support front end of tractor and remove left tire and rim assembly.
- ☐ Disconnect drag-link (1) with lockwasher from steering arm (2).
- ☐ Drive out roll pin (3) securing steering arm to spindle.
- ☐ Disconnect tie rod end (5) from spindle assembly.
- ☐ Using a large punch (6) drive out spindle from both steering arm and axle. Remove thrust washer (7).
- ☐ Drive out bearings (8) from axle assembly and discard.

### Cleaning and Inspection

- ☐ Wipe out old grease from bearing bore in axle and clean spindle.
- ☐ Check bore for damage. Replace axle if damaged beyond repair.
- ☐ Inspect condition of spindle; replace if damaged or excessively worn.

### Assembly

- ☐ Press in new bearings and reassemble.
- ☐ Lubricate through lube fitting until grease appears at new bearings in axle. Wipe away excess grease.



## RIGHT SPINDLE BEARING REPLACEMENT



### Disassembly

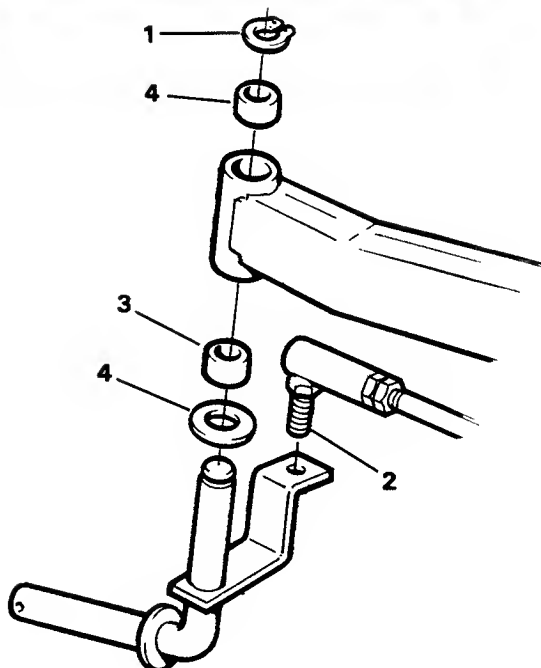
- ☐ Raise and support front end of tractor and remove tire and rim assembly.
- ☐ Remove retaining ring (1) from spindle assembly.
- ☐ Disconnect tie rod end (2) from spindle assembly.
- ☐ Remove spindle assembly from axle. Remove thrust washer (3).
- ☐ Drive out bearings (4) from spindle bearing bore of axle and discard.

### Cleaning and Inspection

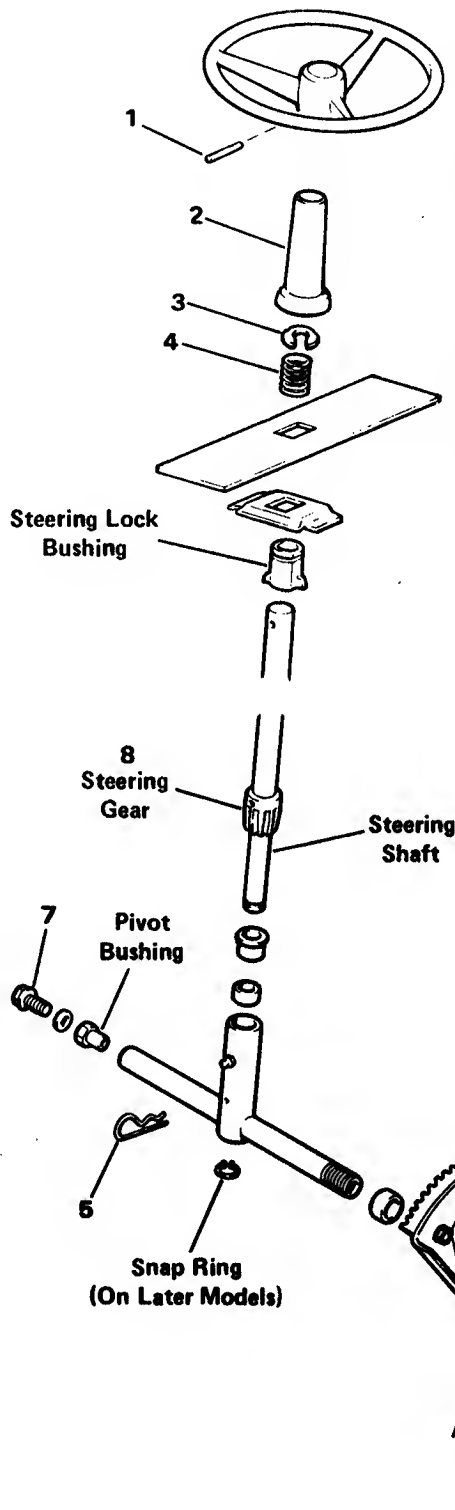
- ☐ Wipe out old grease from bearing bore in axle and clean spindle.
- ☐ Check bore for damage. Replace axle if damaged beyond repair.
- ☐ Inspect condition of spindle; replace if damaged or excessively worn.

### Assembly

- ☐ Press in new bearings and reassemble.
- ☐ Lubricate through lube fitting until grease appears at new bearings in axle. Wipe away excess grease.



# STEERING GEAR OVERHAUL



## Disassembly

☐ Remove steering wheel from shaft by driving out pin (1) with punch (always drive pin from side). Slide actuator (2) off of shaft. Compress spring (4) and remove retaining ring (3) from steering lock bushing. Slide spring off shaft.

☐ Pull out hair-pin (5) retaining lower end of shaft to Bearing Support Assembly

Note: On later models the hair pin was replaced by a snap ring on the end of the steering shaft. To remove the steering shaft on these models, it is necessary to remove the snap ring and drive the roll pin out of the steering gear (8).

☐ Pull steering shaft up and out of support at lower end and then down and out of dash at upper end.

☐ Disconnect draglink (6) from sector.

☐ Remove screws (7) retaining bearing support to tractor side plates. Bearing Support Assembly can be removed from underside of tractor.

## Cleaning and Inspection

☐ Wash all parts thoroughly in clean solvent to remove old lubricant, metallic particles, or dirt from surfaces. Dry all parts to remove cleaning solvent residue.

☐ Replace all bushings and worn bearings and apply a coat of grease to bearing surfaces prior to installation.

☐ Inspect gear teeth for signs of excessive wear or damage. Remove minor nicks using a file.

☐ Inspect retaining ring, spring, hair-pin and steering wheel mounting pin for wear, damage or weakness. Replace parts that exhibit these conditions.

## Assembly

☐ Reverse procedure to assemble steering gear mechanism.

Note: Before installing the spring on the steering lock bushing, center the steering lock bushing in the dash by adjusting the steering cross shaft in the slots provided in the frame so the steering lock bushing moves freely to all tilt steering adjustment positions.

☐ Then tighten the bolts (7) in the steering lock bushings and complete assembly.

☐ Apply a coat of grease to pivots prior to inserting them into ends of bearing support assembly.

☐ When complete, grease lube fitting on bearing support assembly and lube fitting on tube of sector assembly. Pump in grease until seepage is noticed, wipe away excess grease.

## Adjustment

### Steering Gear Backlash Adjustment

☐ Jack front of tractor up so both front wheels are suspended. Loosen backlash adjusting nuts (9).

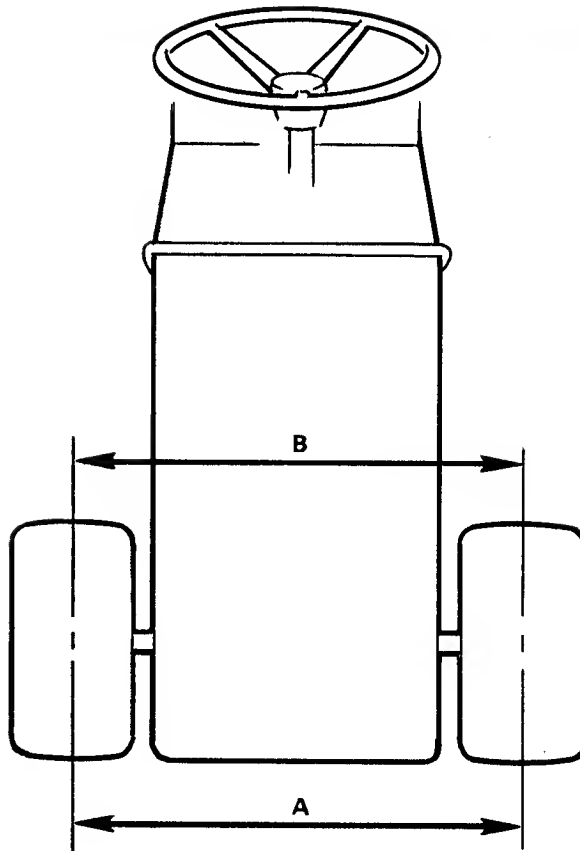
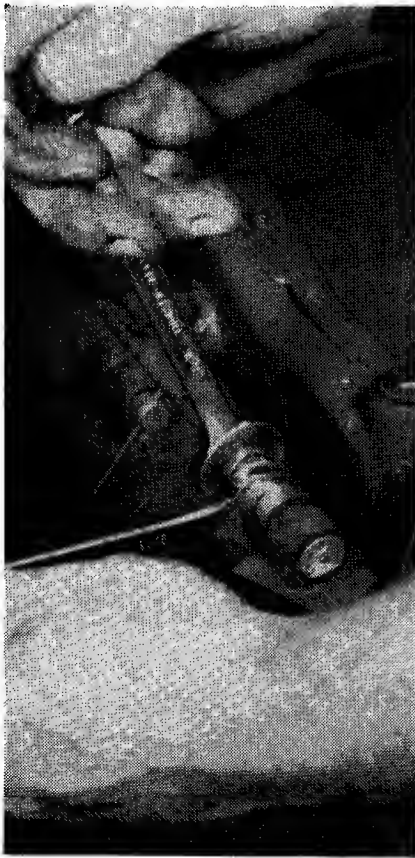
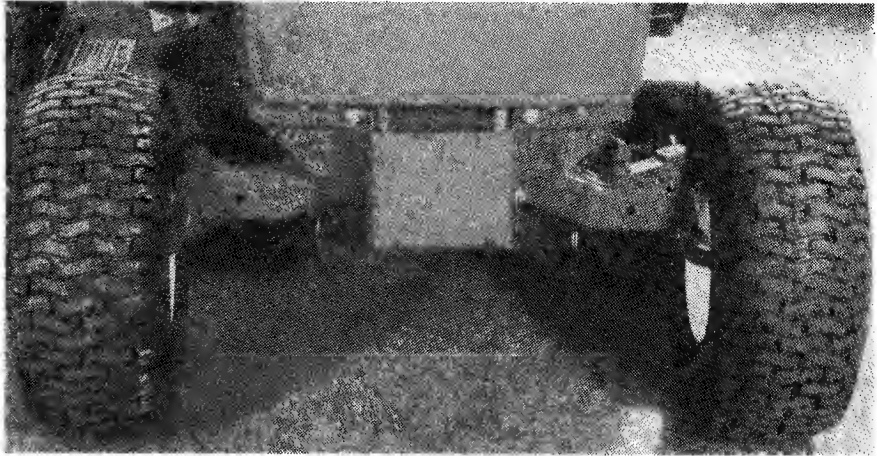
☐ Adjust inside nut until there is no backlash in steering gears with minimal drag when steering wheel is rotated.

☐ Jam outside adjusting nut against inside nut to lock position.

# Steering and Front Axle

## TOE-IN ADJUSTMENT

- ☐ Park tractor on hard level surface, and check that tires are properly inflated.
- ☐ Turn steering wheel so that tires are straight ahead (don't use the position of the steering wheel to determine this).
- ☐ Measure dimensions A and B. Dimension B should be the same to  $3/16"$  larger than A.
- ☐ To adjust, remove nut and lockwasher holding right tie rod ball joint to RH spindle assembly. Back off jam nut from ball joint and turn ball joint. Use two wrenches to prevent damage to ball joint:
- ☐ Clockwise to decrease toe-in (shortens dimension B)
- ☐ Counterclockwise to increase toe-in (lengthens dimension B)
- ☐ One turn is approximately  $1/16"$ . If a large adjustment is required split it between Right and Left ball joints of tie rod.



**Toe-in is a condition that exists when the measured distance at the front of the tires is less than the distance at the rear of the tires. Toe-in compensates for normal steering play and causes the tires to roll in a straight ahead manner.**

## SECTION INDEX

	page
BLADE INSPECTION	2
BLADE SHARPENING	3
BLADE ALIGNMENT- 33" MOWER	
Checking Blade Straightness	4
Straightening the Blade	5
Checking Blade/Deck Parallelism	5
Adjusting Blade/Deck Parallelism	5
BLADE ALIGNMENT- 44" AND 48" MOWERS	
Checking Blade Straightness	6
Checking Blade Mismatch	7
Adjusting Blade Mismatch	7
MOWER INSTALLATION- 33" MOWER	8
MOWER INSTALLATION- 41" MOWER	9
MOWER INSTALLATION 48" MOWER	10
LEVELING- 33" MOWER	11
LEVELING- 41" MOWER	12
LEVELING- 48" MOWER	13
SPINDLE ASSEMBLIES- 33" MOWER	
Spindle Assembly Replacement	14
Spindle Assembly Overhaul	15
SPINDLE ASSEMBLY 41" and 48" MOWERS	
Spindle Assembly Replacement	16
Spindle Assembly Overhaul	17

# Mower Attachments

## BLADE INSPECTION

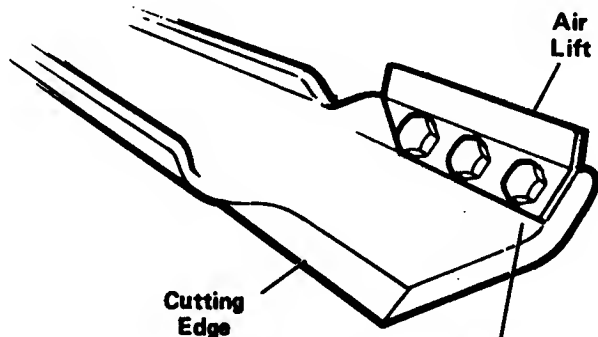
The blade should be inspected before mowing and whenever the mower is serviced. This is a visual inspection that can be made without removing the blade from the mower.

□ First, check for obvious damage such as a bent blade or large nicks produced by the blade hitting a solid object. No attempt should be made to repair such damage. Replace with a new Snapper blade to assure safe operation.

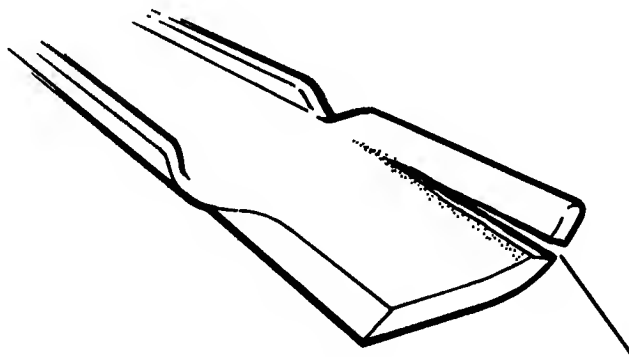
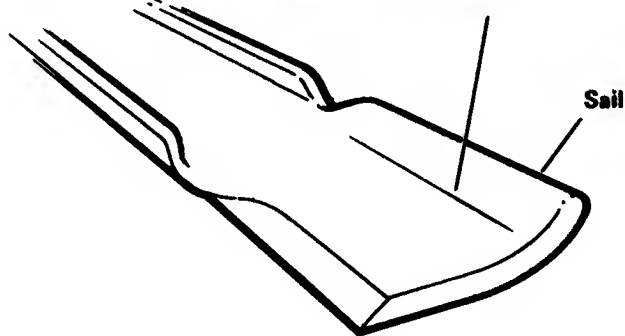
□ It is very important that the blade retaining bolts and nuts are tight to assure that they will not loosen during operation.

□ Check that the air lifters (if equipped) are secure and lockwashers are present. The air lifters and the sail of the blade undergo the most wear especially when the mower is used in dry or sandy areas. If wear is noticeable, it is recommended that the blade be replaced along with new air lifters, attaching screws, lockwashers and nuts.

□ Examine the cutting edges of the blade for sharpness. A dull blade will produce a ragged cut and will require the engine to work harder.



This is a critical area in that excessive wear can separate the sail or air lifters from the blade.



### WARNING

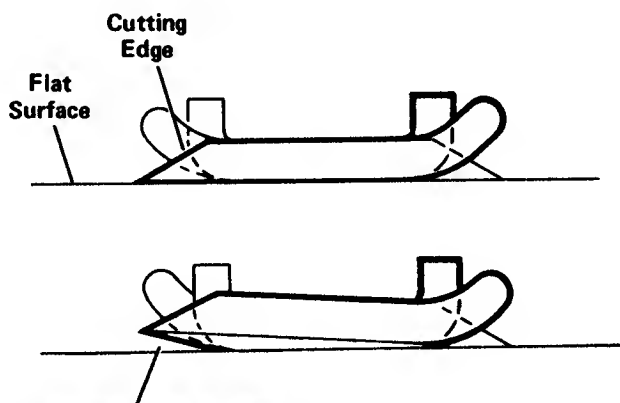
If mower is used in dry and sandy areas, inspect sail or air lifter more frequently to avoid separation of sail from blade

## BLADE SHARPENING

### WARNING

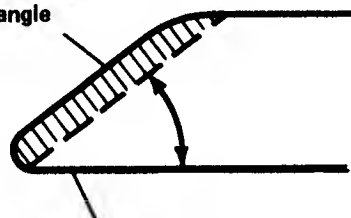
Always wear safety glasses and gloves when grinding or sharpening mower blades.

□ After removing the blade from the mower an additional check should be performed before sharpening. Lay the blade on a flat surface. If cutting edges are twisted upward, sharpening will still not allow the blade to cut at its maximum efficiency. Replace a bent, twisted or warped blade with a new Snapper blade.



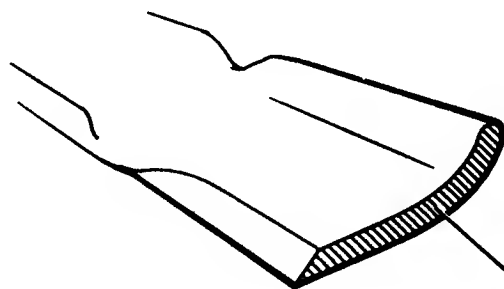
If cutting edge of blade does not lay flat replace it with a new Snapper Blade

Maintain the original cutting edge angle



Do not grind bottom surface of cutting edge

□ Sharpen only the top side of each cutting edge. While grinding, maintain the original cutting edge angle. To maintain balance, grind each cutting edge equally.



To balance, remove metal from heavy end of blade — not from cutting edge of heavy end

□ Check blade balance using a commercial balancer. Follow manufacturers instructions. If the blade is out of balance, grind metal from the end of the blade—not the cutting edge. Recheck blade balance.

# Mower Attachments

## BLADE ALIGNMENT— 33" MOWER

Proper blade alignment is a straight blade with a cutting plane parallel with the mower deck. If the blade is not straight, then one cutting edge is doing all the work, reducing the maximum efficiency for which the mower is designed. If the cutting plane is not parallel with the deck, the grass within a cut path may not be equal in height from one side to the other. This condition will cause the lawn to have a streaked appearance.

To correct these conditions, first check that the blade is straight and adjust if necessary. Once the blade is known to be straight, then blade/deck parallelism can be checked and corrected.

### Checking Blade Straightness

#### NOTE

The following procedures are made with the mower assembly detached from the tractor.

- ☐ Mark one end of the blade "A" and the other "B."
- ☐ Measure the distance between the lip of the deck and blade tip "A." Note the dimension.
- ☐ Turn the blade 180° so that blade tip "B" is now at the same point on the deck lip. Make the same measurement and compare it to the first measurement.

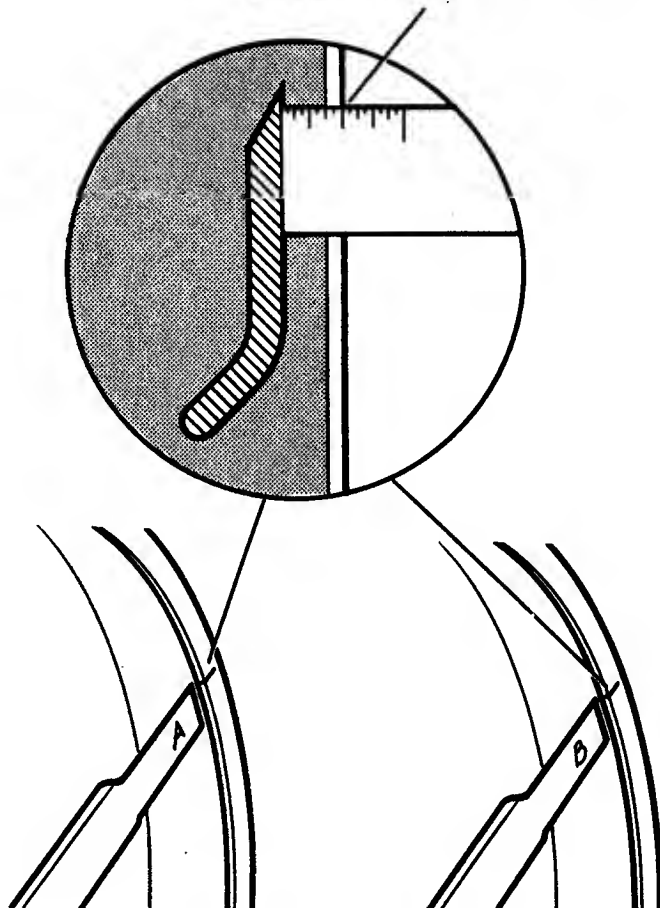
If the dimensions are the same or within 1/16", the blade is straight and requires no adjustment. Proceed to the next check, blade/deck parallelism.

If the two dimensions differ by more than 1/16", the blade is bent and should be straightened. Mark the blade tip that is high.

#### WARNING

Do Not attempt to straighten a blade that is bent due to hitting a solid object. Replace the blade and check its straightness as outlined below. This procedure is intended to overcome blade manufacturing variances only.

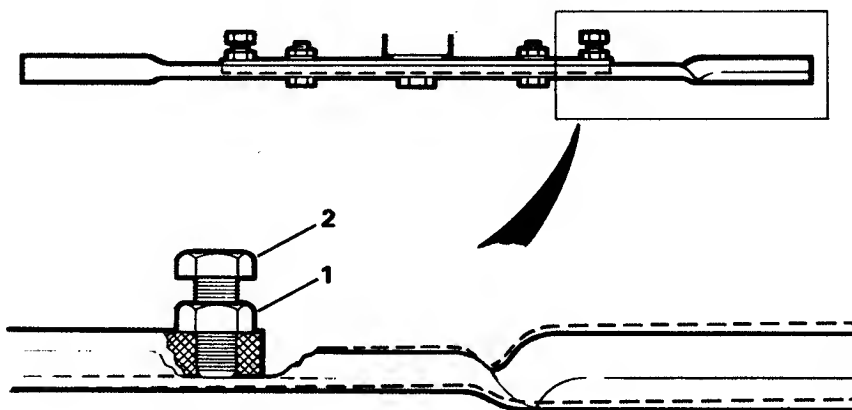
Distance for each end of blade should be the same or within 1/16"



Take measurements with each end of blade at same point at deck

## Straightening the Blade

- ☐ Loosen jam nut (1) on the end of the blade that is marked high.
- ☐ Tighten blade adjusting screw (2) against the blade until the blade tip comes down to the same level as the other. Make small adjustments and check by measurement as previously outlined.
- ☐ When the blade is straight, tighten jam nut (1) to secure the adjusting screw setting. Now proceed to the next check; blade/deck parallelism.



## Checking Blade/Deck Parallelism

- ☐ Measure the distance between one end of the blade and the deck lip. Rotate the blade and continue taking measurements (at least 8 places) along the perimeter of the deck lip.

If all measurements are equal or within  $1/8$ " the blade is parallel to the deck.

If the blade is not parallel make a mark on the deck lip where the smallest dimension is measured. The highest and lowest point should be directly opposite from each other.

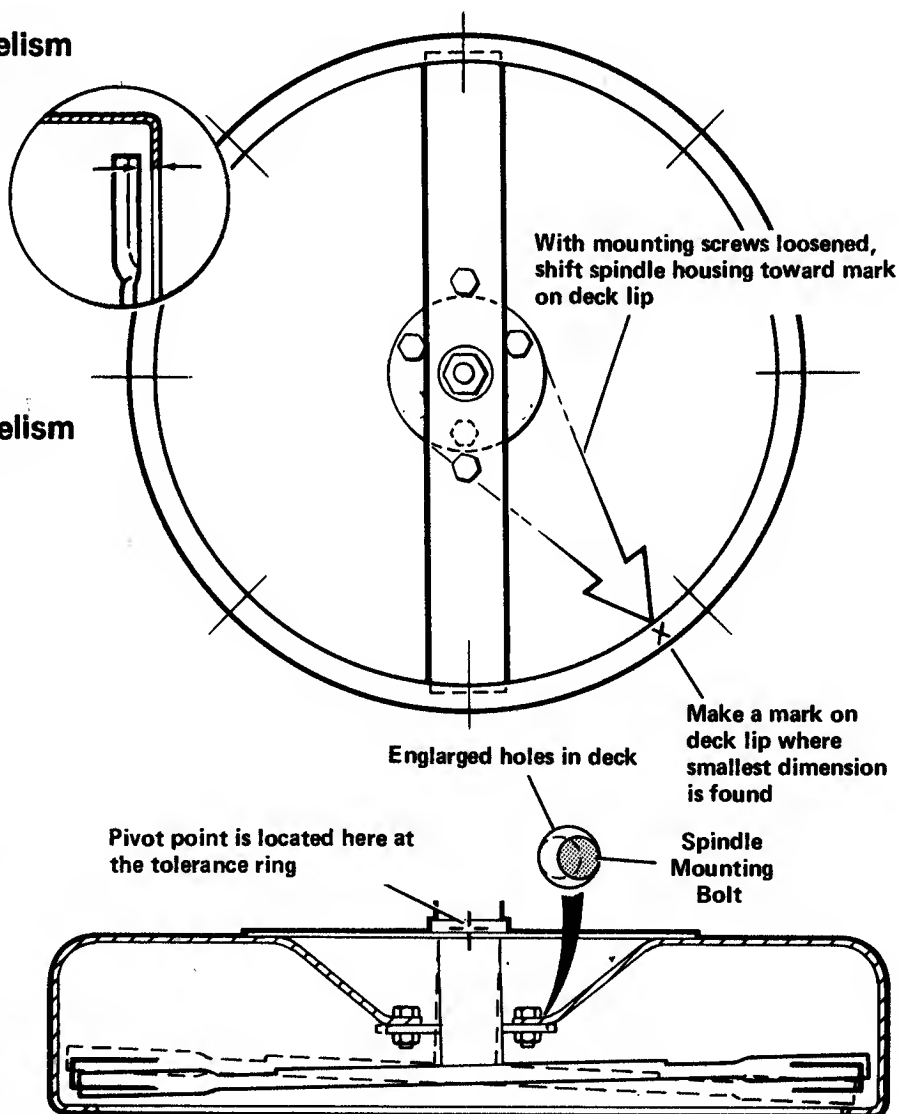
## Adjusting Blade/Deck Parallelism

To adjust the blade parallel with the deck will require shifting the spindle assembly within the enlarged mounting holes in the deck surface. The spindle assembly must be shifted towards the mark on the deck lip (low point).

Because the spindle housing is captured in a brace near the top (around tolerance ring), shifting of the spindle housing mounting will tilt the cutting plane of the blade.

To adjust blade/deck parallelism, proceed as follows:

- ☐ Loosen the 3 spindle mounting screws only enough to shift the spindle housing on the deck.
- ☐ Shift the spindle housing in the direction of the mark drawn on the deck lip.
- ☐ Tighten the mounting screws to secure spindle housing location and check again for parallelism. Measure the distance between one end of the blade and at each mark previously made on the deck. If these measurements are equal or within  $1/8$ ", the blade is parallel to the mower deck.



# Mower Attachments

## BLADE ALIGNMENT— 41" AND 48" MOWERS

Proper blade alignment is straight blades with cutting planes parallel with the mower deck. If the blades are not straight, then one cutting edge of a blade is doing all the work, reducing the maximum efficiency for which the mower is designed. If the cutting planes are not parallel to each other, the grass within a cut path may not be equal in height from one side to the other. This condition will cause the lawn to have a streaked appearance.

To correct these conditions, first check that the blades are straight and adjust if necessary. Once the blades are known to be straight, then blade mismatch can be checked and corrected.

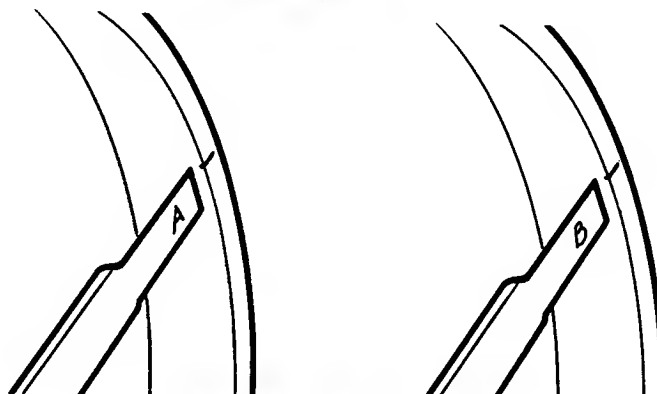
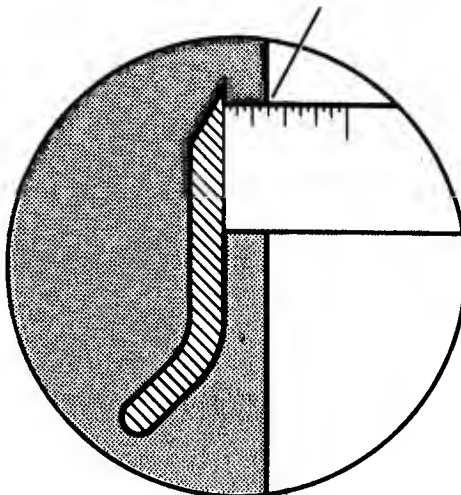
### Checking Blade Straightness

- ☐ On each blade, mark one end "A" and the other "B."
- ☐ Measure the distance between the deck and one blade tip "A." Note the dimension.
- ☐ Turn the same blade 180° so that blade tip "B" is now at the same point on the deck. Make the same measurement and compare it to the first measurement.

If the dimensions of a blade are the same or within  $\frac{3}{32}$ ", the blade is sufficiently straight. Mark the highest tip of each blade and repeat the procedure on the remaining blade(s).

If the dimensions of a blade differ by more than  $\frac{3}{32}$ ", the blade should be replaced.

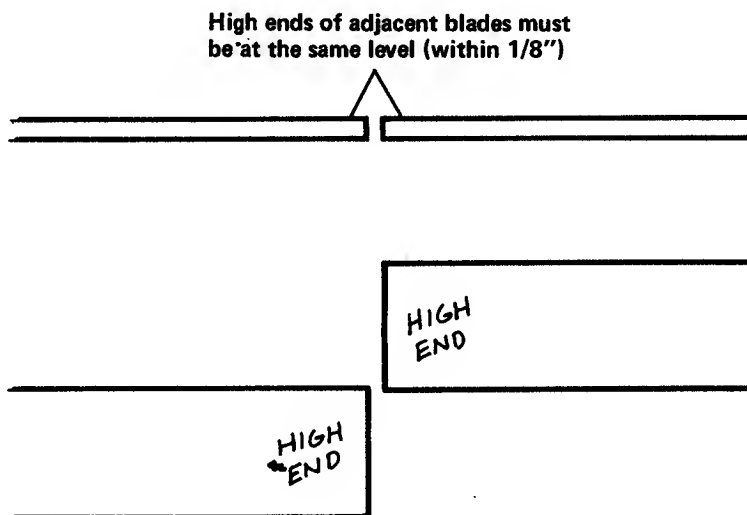
Distance for each end of blade should be the same or within  $\frac{3}{32}$ "



Take measurements with each end of blade at same point at deck

## Checking Blade Mismatch

- ☐ Place blades in line with the highest tips next to each other. The tips of the adjacent blade must be within  $1/8"$  of each other, then the blades are parallel.
- ☐ If the adjacent blade tips mismatch over  $1/8"$ , then the spindle with the highest blade tip must be shifted to tilt the blade back to parallel.



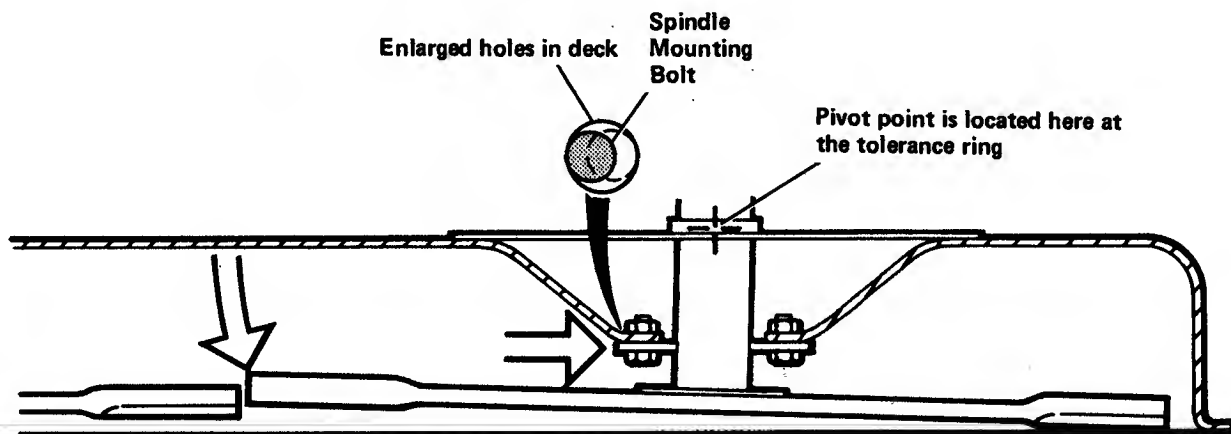
## Adjusting Blade Mismatch

Adjusting blade mismatch will require shifting the spindle assembly within the enlarged mounting holes in the deck surface. The spindle assembly must be shifted in the direction where the blade tip is at its lowest point.

Because the spindle housing is captured in a brace near the top (around tolerance ring), shifting of the spindle housing mounting will tilt the cutting plane of the blade.

To adjust blade mismatch, proceed as follows:

- ☐ Loosen the six spindle mounting screws only enough to shift the spindle housing on the deck.
- ☐ Shift the spindle housing in the direction to lower the end of the high blade tip and match it to the level of the adjacent blade tip.
- ☐ Tighten the mounting screws to secure spindle housing location and check again for blade mismatch. More than one spindle may have to be shifted to align the blade ends.



Shifting the spindle housing will adjust the cutting plane angle

# Mower Attachments

## MOWER INSTALLATION— 33" MOWER

### WARNING

Blades should always be thoroughly inspected for excessive wear damage or misalignment before installing mower assembly to tractor. Refer to "Blade Inspection" and "Blade Alignment" at the beginning of this section.

With the mower assembly properly set up, the unit can be installed as follows:

☐ Check belt routing to be sure it is as shown in the illustration. At the same time, check the condition of the belt. Replace the belt if it shows signs of excessive wear, fraying or cracking.

☐ Turn the front wheels of the tractor to the left and slide the mower under the tractor from the right side.

☐ Open the hood and disconnect the headlight plugs. Remove the hairpin(s) in the hood stop cable and remove the hood.

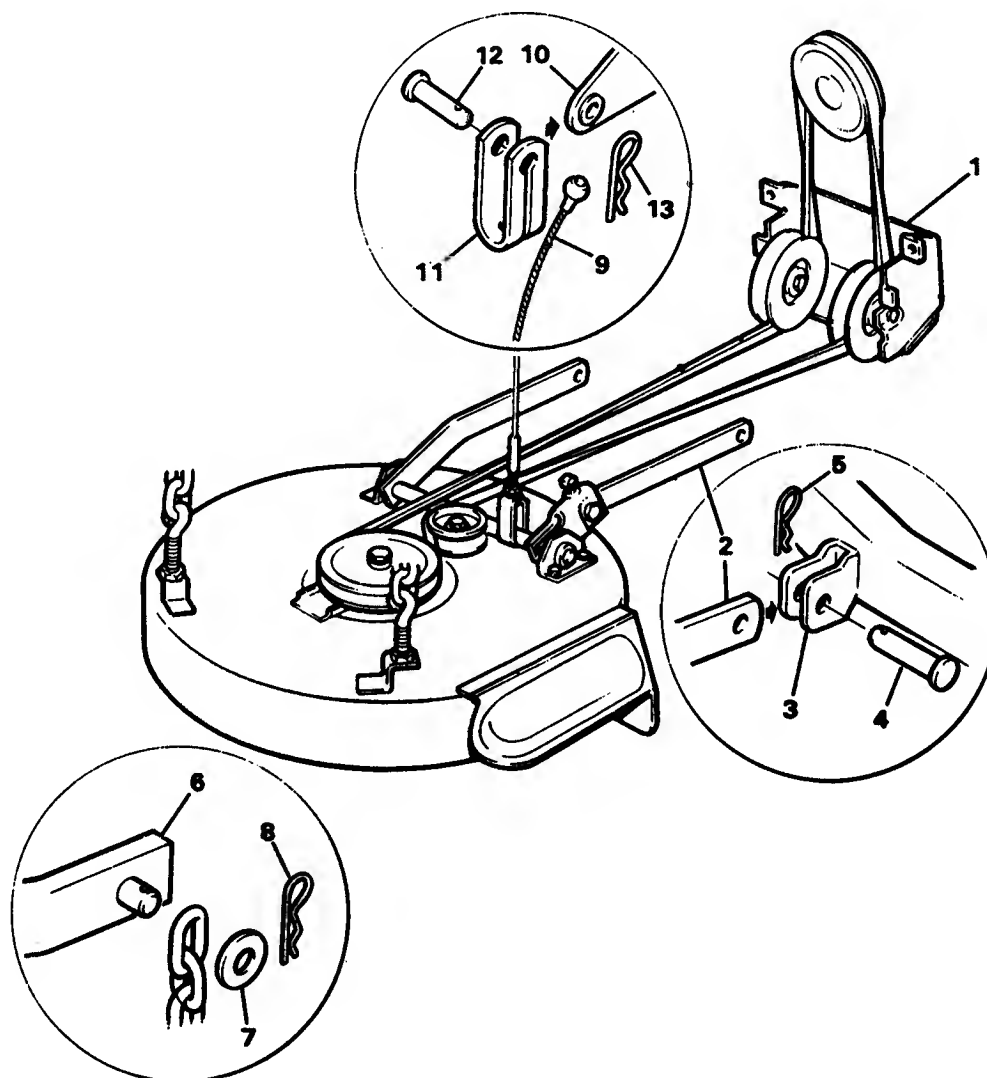
☐ Attach the mule drive (1) to front of tractor with two carriage bolts, bolt retainers and nuts.

☐ Pull front lift arms (2) up into position between the implement attaching brackets (3) on back of front axle and secure at each side with a large clevis pin (4) and large hairpin (5).

☐ Place implement lift lever in lowest position (full forward), raise deck and secure to rear lift arm bracket (6) with washer (7) and small hairpin (8).

☐ Slip ball end of cable (9) attached to front lift arm (10) into slot in the clevis (11). Attach the clevis to the lift lever bracket with a small clevis pin (12) and small hairpin (13).

☐ Reinstall hood on tractor, hook up lights and hood stop cable.



## MOWER INSTALLATION— 41" MOWER

### WARNING

Blades should always be thoroughly inspected for excessive wear damage or misalignment before installing mower assembly to tractor. Refer to "Blade Inspection" and "Blade Alignment" at the beginning of this section.

With the mower assembly properly set up, the unit can be installed as follows:

□ Check belt routing to be sure it is as shown in the illustration. At the same time, check the condition of the belt. Replace the belt if it shows signs of excessive wear, fraying or cracking.

□ Turn the front wheels of the tractor to the left and slide the mower under the tractor from the right side.

□ Open the hood and disconnect the headlight plugs. Remove the hairpin(s) in the hood stop cable and remove the hood.

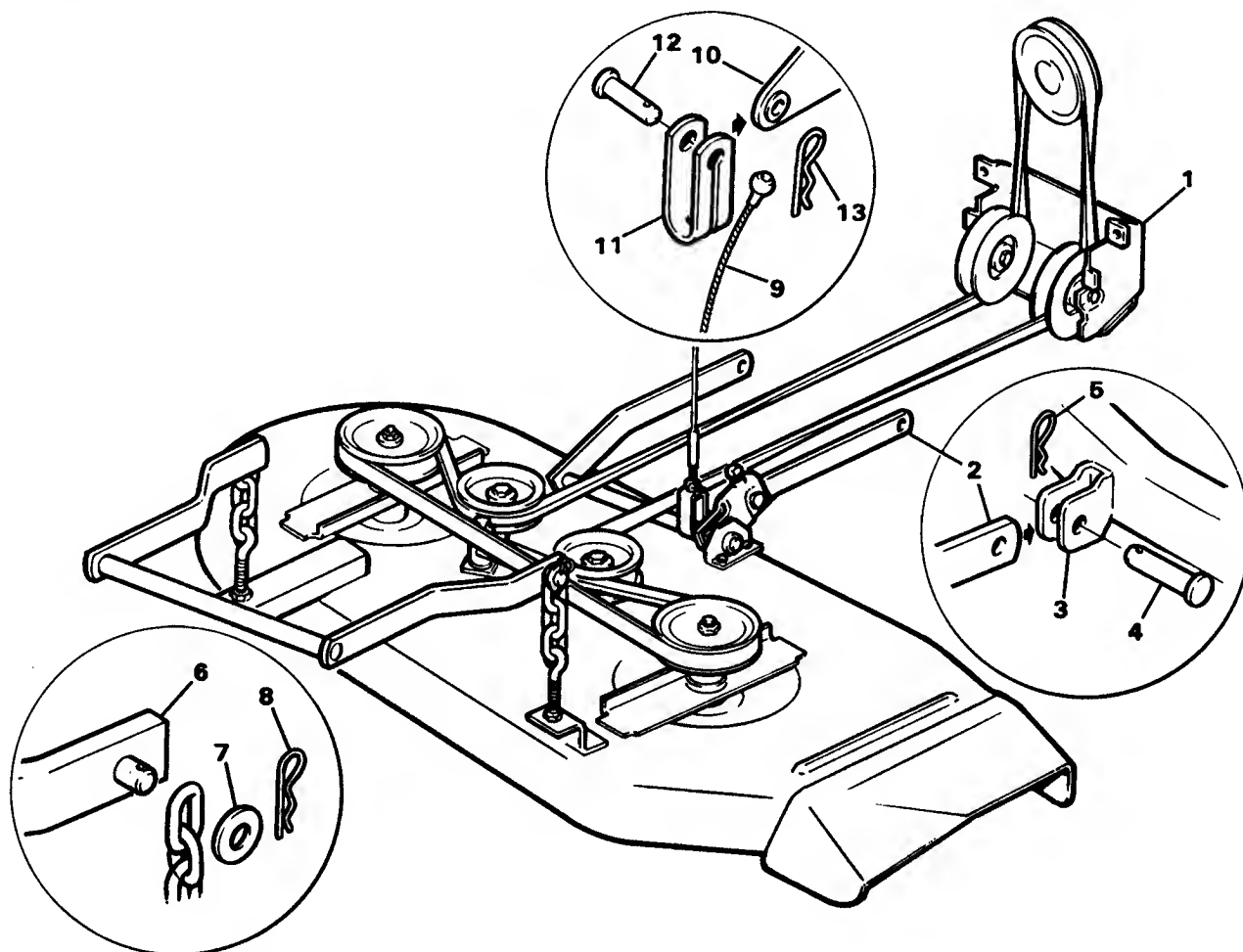
□ Attach the mule drive (1) to front of tractor with two carriage bolts, bolt retainers and nuts.

□ Pull front lift arms (2) up into position between the implement attaching brackets (3) on back of front axle and secure at each side with a large clevis pin (4) and large hairpin (5).

□ Place implement lift lever in lowest position (full forward), raise deck and secure to rear lift arm bracket (6) with washer (7) and small hairpin (8).

□ Slip ball end of cable (9) attached to front lift arm (10) into slot in the clevis (11). Attach the clevis to the lift lever bracket with a small clevis pin (12) and small hairpin (13).

□ Reinstall hood on tractor, hook up lights and hood stop cable.



# Mower Attachments

## MOWER INSTALLATION— 48" MOWER

### WARNING

Blades should always be thoroughly inspected for excessive wear damage or misalignment before installing mower assembly to tractor. Refer to "Blade Inspection" and "Blade Alignment" at the beginning of this section.

With the mower assembly properly set up, the unit can be installed as follows:

□ Check belt routing to be sure it is as shown in the illustration. At the same time, check the condition of the belt. Replace the belt if it shows signs of excessive wear, fraying or cracking.

□ Turn the front wheels of the tractor to the left and slide the mower under the tractor from the right side.

□ Open the hood and disconnect the headlight plugs. Remove the hairpin(s) in the hood stop cable and remove the hood.

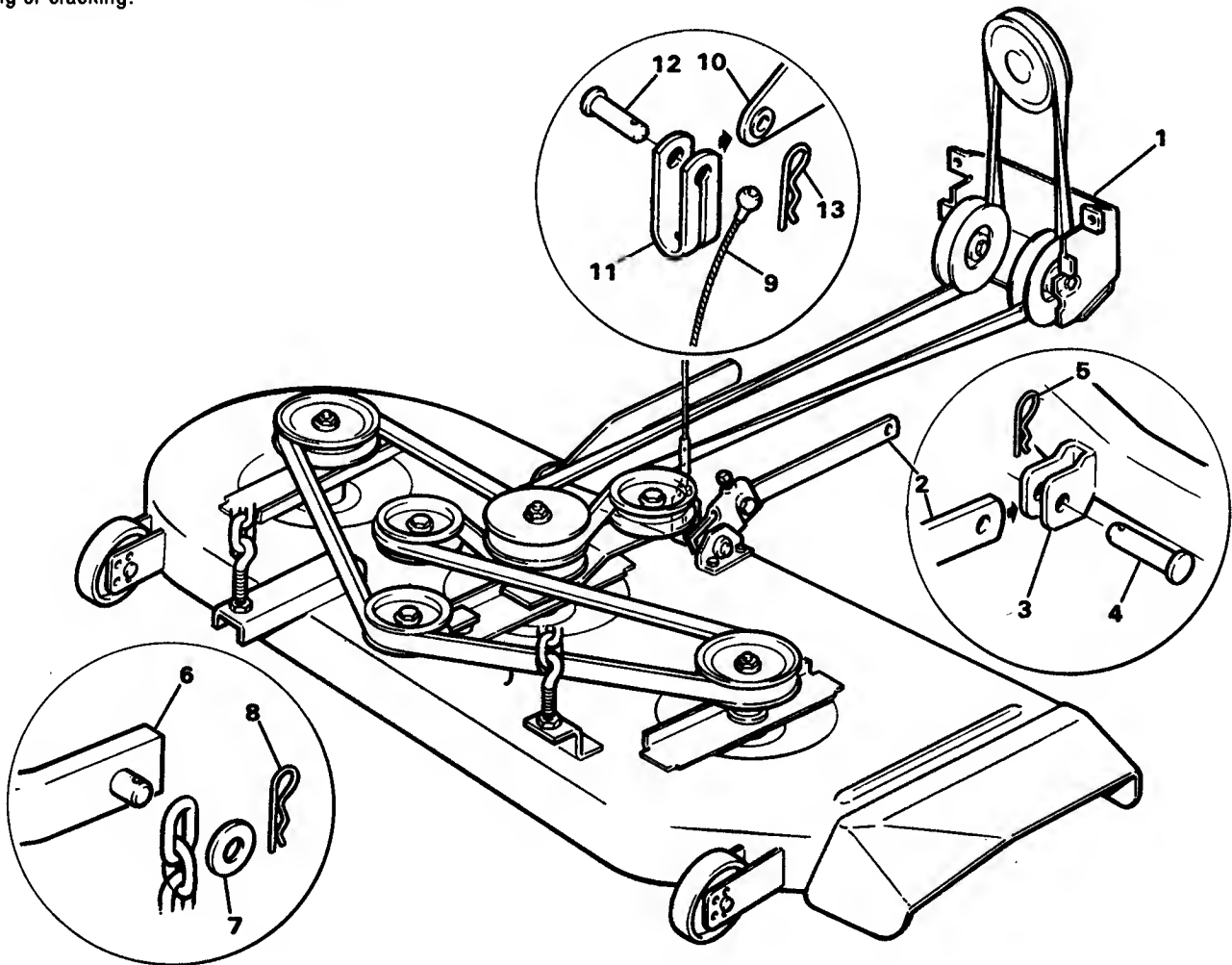
□ Attach the mule drive (1) to front of tractor with two carriage bolts, bolt retainers and nuts.

□ Pull front lift arms (2) up into position between the implement attaching brackets (3) on back of front axle and secure at each side with a large clevis pin (4) and large hairpin (5).

□ Place implement lift lever in lowest position (full forward), raise deck and secure to rear lift arm bracket (6) with washer (7) and small hairpin (8).

□ Slip ball end of cable (9) attached to front lift arm (10) into slot in the clevis (11). Attach the clevis to the lift lever bracket with a small clevis pin (12) and small hairpin (13).

□ Reinstall hood on tractor, hook up lights and hood stop cable.



## LEVELING— 33" MOWER

Once the mower assembly is installed it must be leveled before mowing. With the blade sharpened and properly aligned, a level deck will insure a clean and even cut.

To level the mower assembly to the floor, proceed as follows:

- ☐ Check the air pressure in the tires; 10 psi front, 8 psi rear.
- ☐ Move the tractor to a level area of the shop floor.
- ☐ Place a 2x4 block on edge under the rear lip of the deck in the exact center between the rear chains.
- ☐ Place the lift lever in #5 notch to produce slack in both chains.
- ☐ Turn the blade side to side and measure the distance from floor to each blade tip. Dimensions should be within 1/8" of each other.

☐ If blade is not level with the floor, loosen capscrew (1) on the knuckle and jam nut (2) on adjusting setscrew (3). Back the setscrew almost all the way out. Push down on right side of deck and snug bolt (1), then tighten setscrew (3) to raise right side of deck until both sides are level. Jam nut (2) and securely tighten bolt (1) to lock at setting.

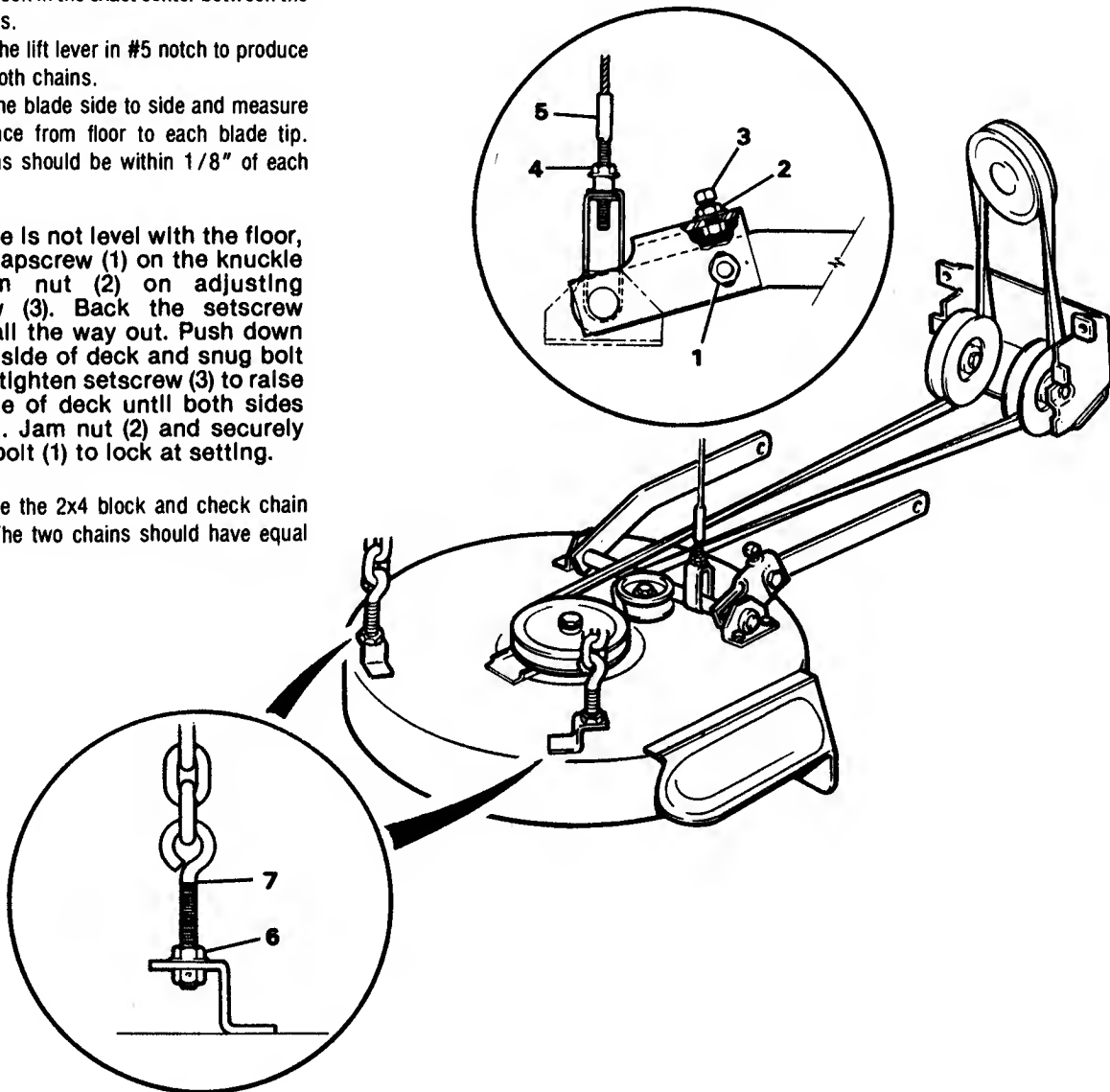
- ☐ Remove the 2x4 block and check chain tension. The two chains should have equal

tension; if not, one of the chains will have slack. Adjust the eyebolt of the slack chain until tension of both chains are equal.

- ☐ Rotate the blade to the fore and aft position and measure the distance from the floor to the front blade tip. The distance should be 1". If adjustment is required, loosen jam nut (4) on the front lift cable (5) and turn the threaded

end of cable until blade tip is properly positioned. Tighten jam nut.

- ☐ Measure the distance from floor to rear blade tip. The distance should be the same as the front. If adjustment is required, loosen jam nuts (6) on each rear chain eyebolt (7) move both eyebolts the same amount until the 1" dimension is obtained.



# Mower Attachments

## LEVELING— 41" MOWER

Once the mower assembly is installed it must be leveled before mowing. With the blades sharpened and properly aligned, a level deck will insure a clean and even cut.

To level the mower assembly to the floor, proceed as follows:

- ☐ Check the air pressure in the tires; 10 psi front, 8 psi rear.
- ☐ Move the tractor to a smooth, flat and level area of the shop floor.
- ☐ Place a 2x4 block on edge under the front lip of the deck in the exact center between the front lift arms.
- ☐ Place the lift lever in #5 notch.
- ☐ Loosen jam nut (1) on the front lift cable (2) and adjust until the front lip of the deck is resting on the 2x4 block and the cable is slack.
- ☐ Loosen capscrew (3) on the knuckle and jam nut (4) on adjusting setscrew (5). Back out setscrew (5) until it is flush with the outside of nut (6).
- ☐ Loosen jam nut (7) and adjust both rear chain eyebolts (8) the same amount until the top of the deck is 3/8" higher at the rear than at the front. Measure directly in front of and behind the right hand blade spindle.
- ☐ Turn the outside blades perpendicular to the tractor frame.
- ☐ Adjust the rear chain eyebolts (6) until the outside tips are level.

### NOTE

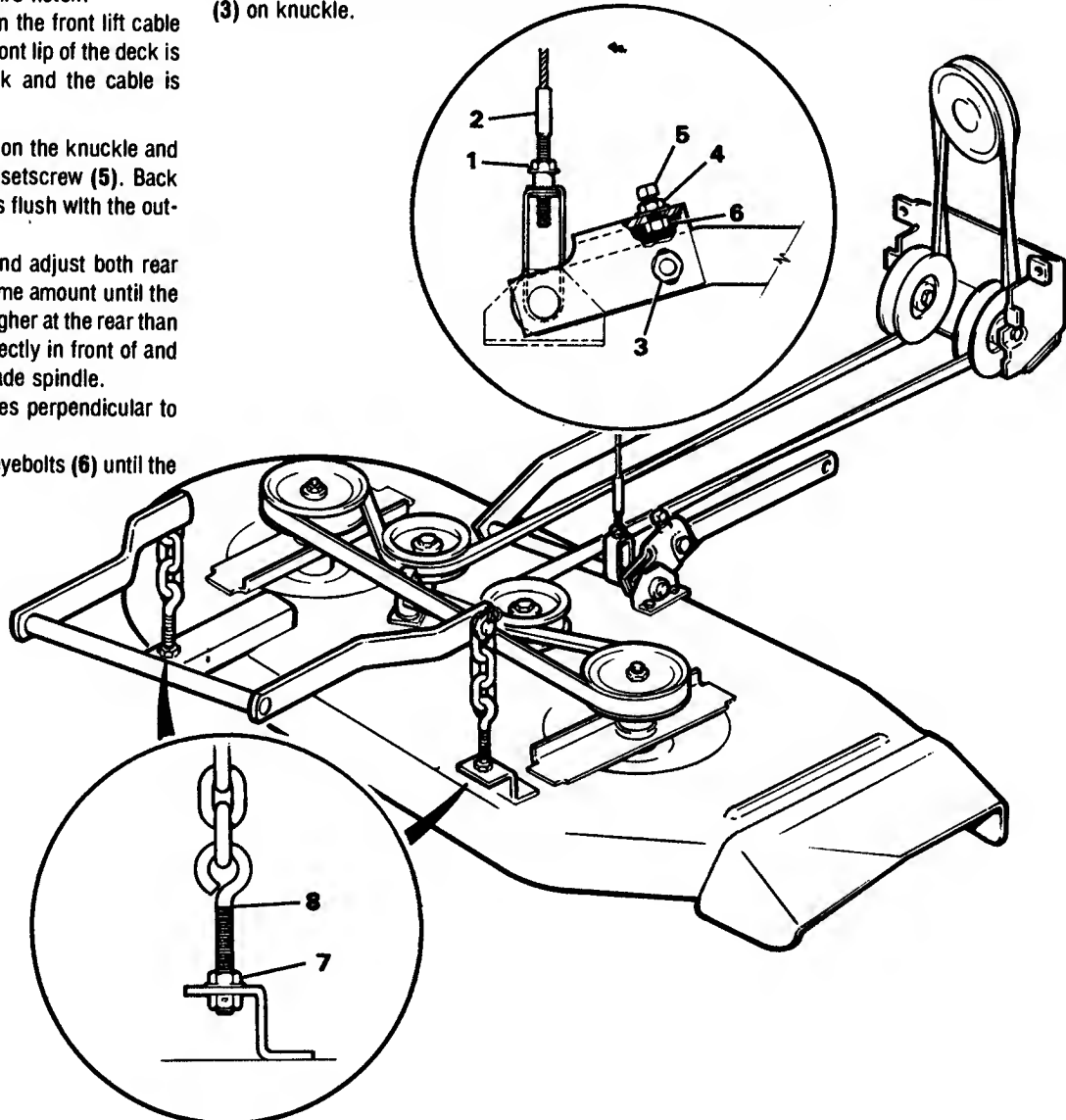
Adjust one side up approximately the same amount the other side is adjusted down. Tighten jam nuts on eyebolts.

- ☐ Take the slack out of the front lift cable (2) and tighten the jam nut (1). Remove the 2x4 block.
- ☐ Push the right hand side of the deck down and hold it there while tightening capscrew (3) on knuckle.

### NOTE

Tighten only enough to hold the deck in position while adjusting.

- ☐ Turn the adjusting setscrew (5) clockwise until the outside tips are level again. Lock jam nut (4) on the adjusting setscrew.
- ☐ Push the right hand side of the deck down and hold it there while securely tightening knuckle capscrew (3).



## LEVELING— 48" MOWER

Once the mower assembly is installed it must be leveled before mowing. With the blades sharpened and properly aligned, a level deck will insure a clean and even cut.

To level the mower assembly to the floor, proceed as follows:

- ☐ Check the air pressure in the tires; 10 psi front, 8 psi rear.
- ☐ Move the tractor to a smooth, flat and level area of the shop floor.
- ☐ Place a 2x4 block on edge under the front lip of the deck in the exact center between the front lift arms.
- ☐ Place the lift lever in #5 notch.
- ☐ Loosen jam nut (1) on the front lift cable (2) and adjust until the front lip of the deck is resting on the 2x4 block and the cable is slack.

### NOTE

Make sure that the block does not interfere with the path of the center blade.

- ☐ Loosen capscrew (3) on the knuckle and jam nut (4) on adjusting setscrew (5). Back out setscrew (5) until it is flush with the outside of nut (6).

- ☐ Loosen jam nut (7) and adjust both rear chain eyebolts (8) the same amount until the top of the deck is  $\frac{3}{8}$ " higher at the rear than at the front. Measure directly in front of and behind the right hand blade spindle.
- ☐ Turn the outside blades perpendicular to the tractor frame.
- ☐ Adjust the rear chain eyebolts (6) until the outside tips are level.

### NOTE

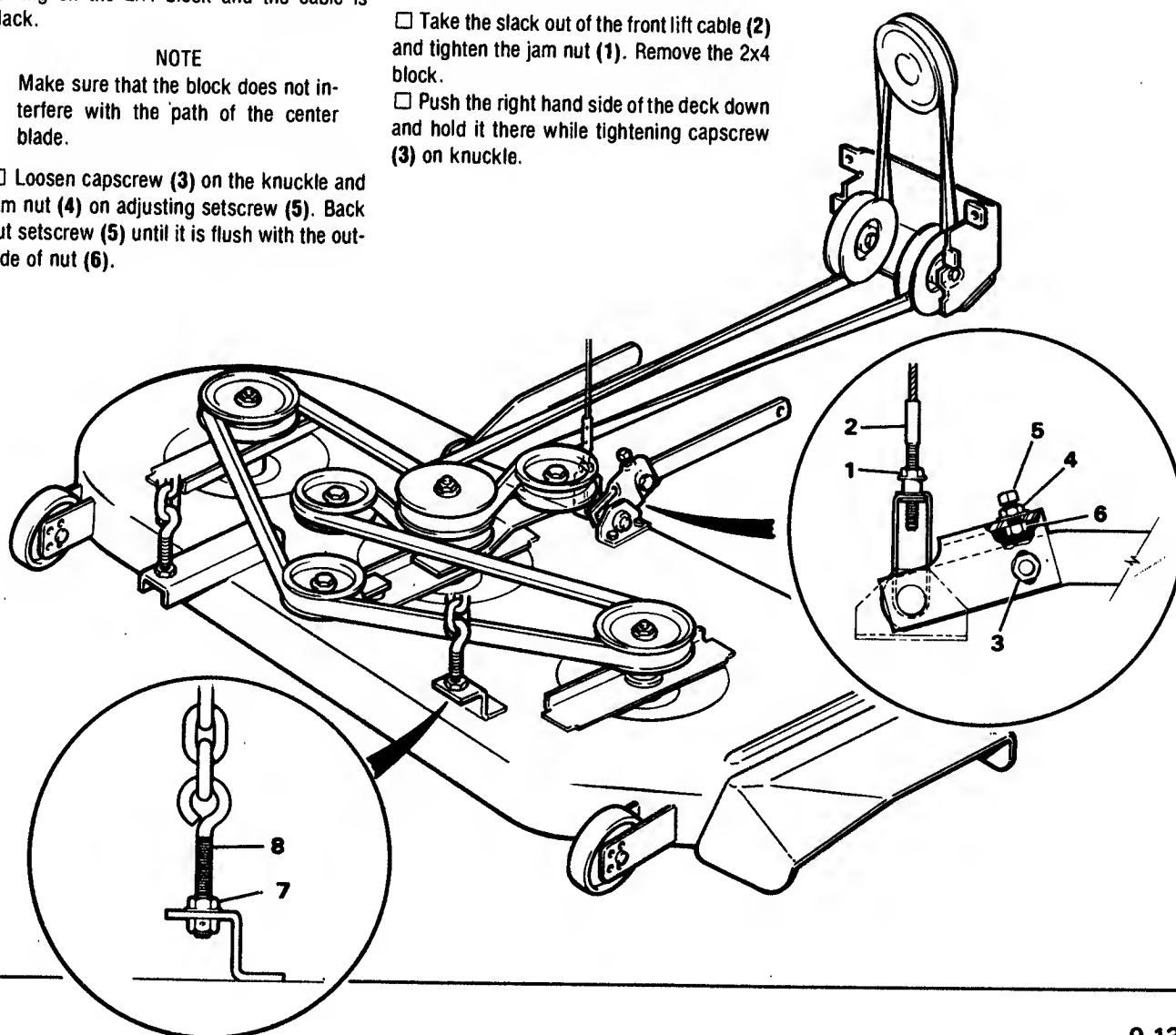
Adjust one side up approximately the same amount the other side is adjusted down. Tighten jam nuts on eyebolts.

- ☐ Take the slack out of the front lift cable (2) and tighten the jam nut (1). Remove the 2x4 block.
- ☐ Push the right hand side of the deck down and hold it there while tightening capscrew (3) on knuckle.

### NOTE

Tighten only enough to hold the deck in position while adjusting.

- ☐ Turn the adjusting setscrew (5) clockwise until the outside tips are level again. Lock jam nut (4) on the adjusting setscrew.
- ☐ Push the right hand side of the deck down and hold it there while securely tightening knuckle capscrew (3).
- ☐ Set the gage wheels so that they are touching the cut grass. The gage wheels must not support the weight of the mower.



# Mower Attachments

## SPINDLE ASSEMBLY— 33" MOWER

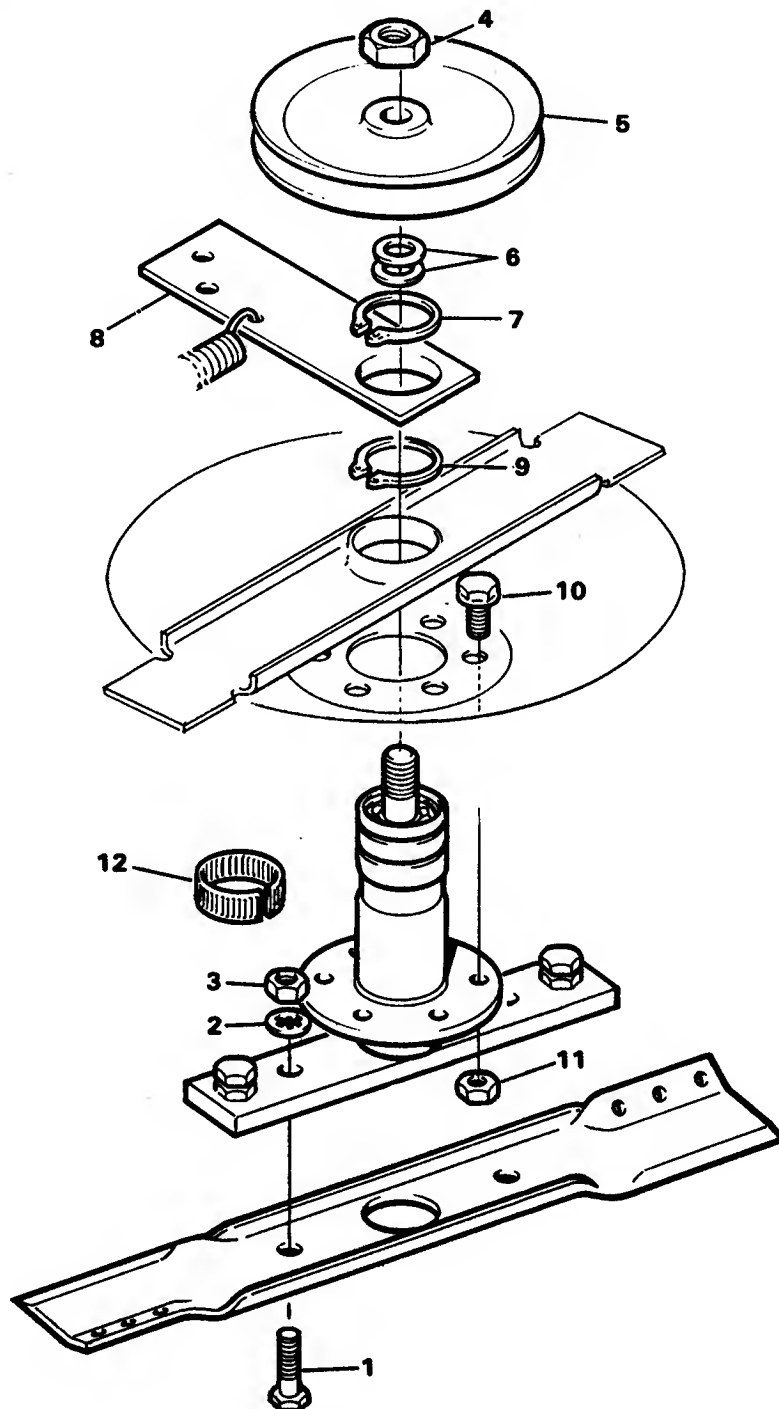
The spindle can either be replaced as an assembly or rebuilt using individual replacement parts. The following procedures are outlined separately and are performed with the mower assembly removed from the tractor.

### Spindle Assembly Replacement

#### WARNING

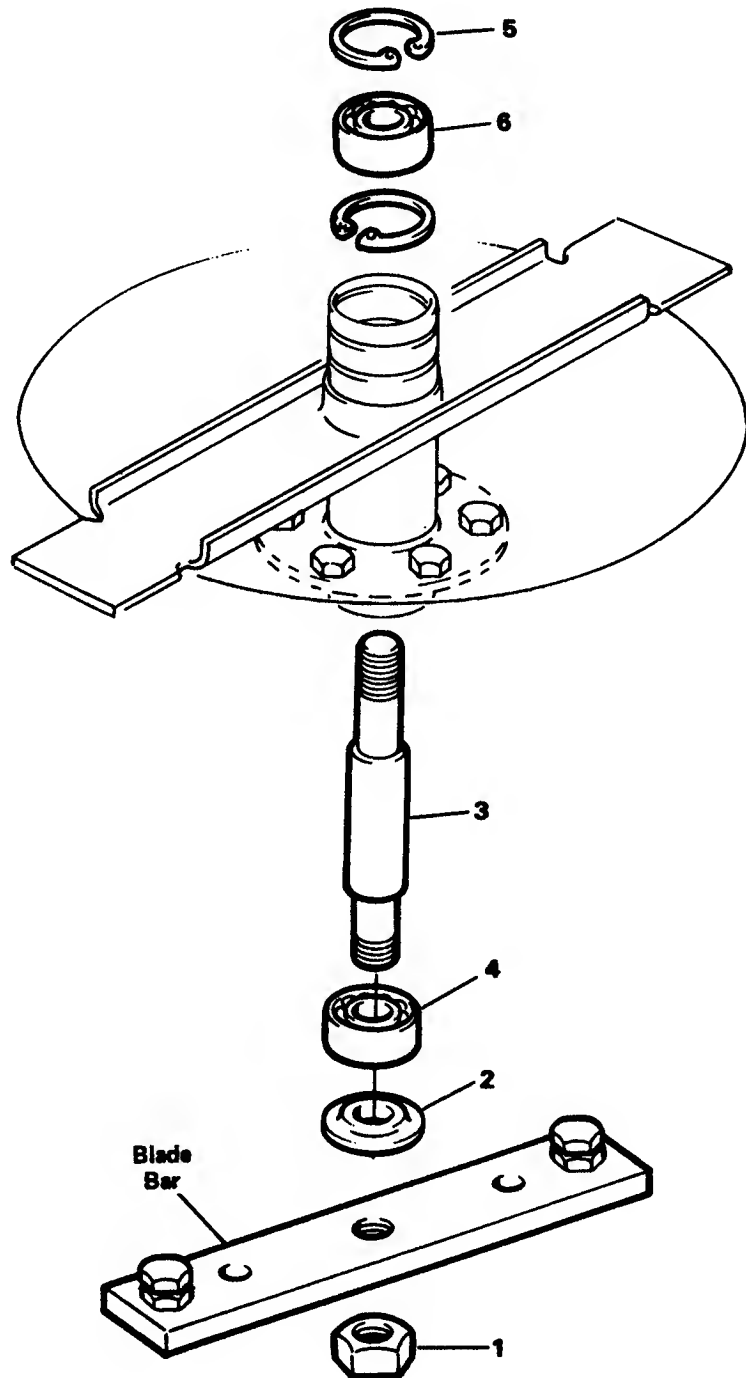
Do not handle cutting blade with bare hands; wear gloves. When removing blade from mower, block it from turning with a block of wood.

- ☐ Remove the blade by removing two 1/2-20x1" capscrews (1), 1/2" internal tooth lockwashers (2) and 1/2-20 nuts (3).
- ☐ Remove spindle pulley nut (4). Hold blade bar from turning while loosening pulley nut.
- ☐ Remove spindle pulley (5) and spacer washers (6) from spindle shaft.
- ☐ Remove retaining ring (7) and lift idler arm (8) from spindle housing.
- ☐ Remove retaining ring (9) from spindle housing.
- ☐ Remove six screws (10) and nuts (11) securing spindle housing to deck and remove the spindle assembly from deck.
- ☐ Reverse the foregoing to install replacement spindle assembly. Install tolerance ring (12) to the new spindle assembly. This item does not come with a new spindle assembly.
- ☐ Check for blade straightness and adjust if necessary. Refer to "Adjustments" in this section.



## Spindle Assembly Overhaul

- ☐ Perform the first three steps of "Spindle Assembly Replacement." The following procedure does not require the removal of the idler arm from the spindle housing.
- ☐ Block blade bar from turning and remove lock nut (1) from spindle shaft. Strike edge of blade bar with soft face mallet to rotate it loose on threads of spindle. Spin blade bar completely off of spindle.
- ☐ Remove spindle washer (2) from spindle.
- ☐ Using a mallet, tap the top of the spindle (3) downward until spindle and lower bearing (4) are free of housing. Remove lower bearing from spindle.
- ☐ Remove top retaining ring (5) and remove top bearing (6).
- ☐ Reverse the foregoing to install replacement parts in the spindle assembly. When installing blade bar, torque locknut (1) to 70 Ft. Lbs.



# Mower Attachments

## SPINDLE ASSEMBLY— 41" AND 48" MOWERS

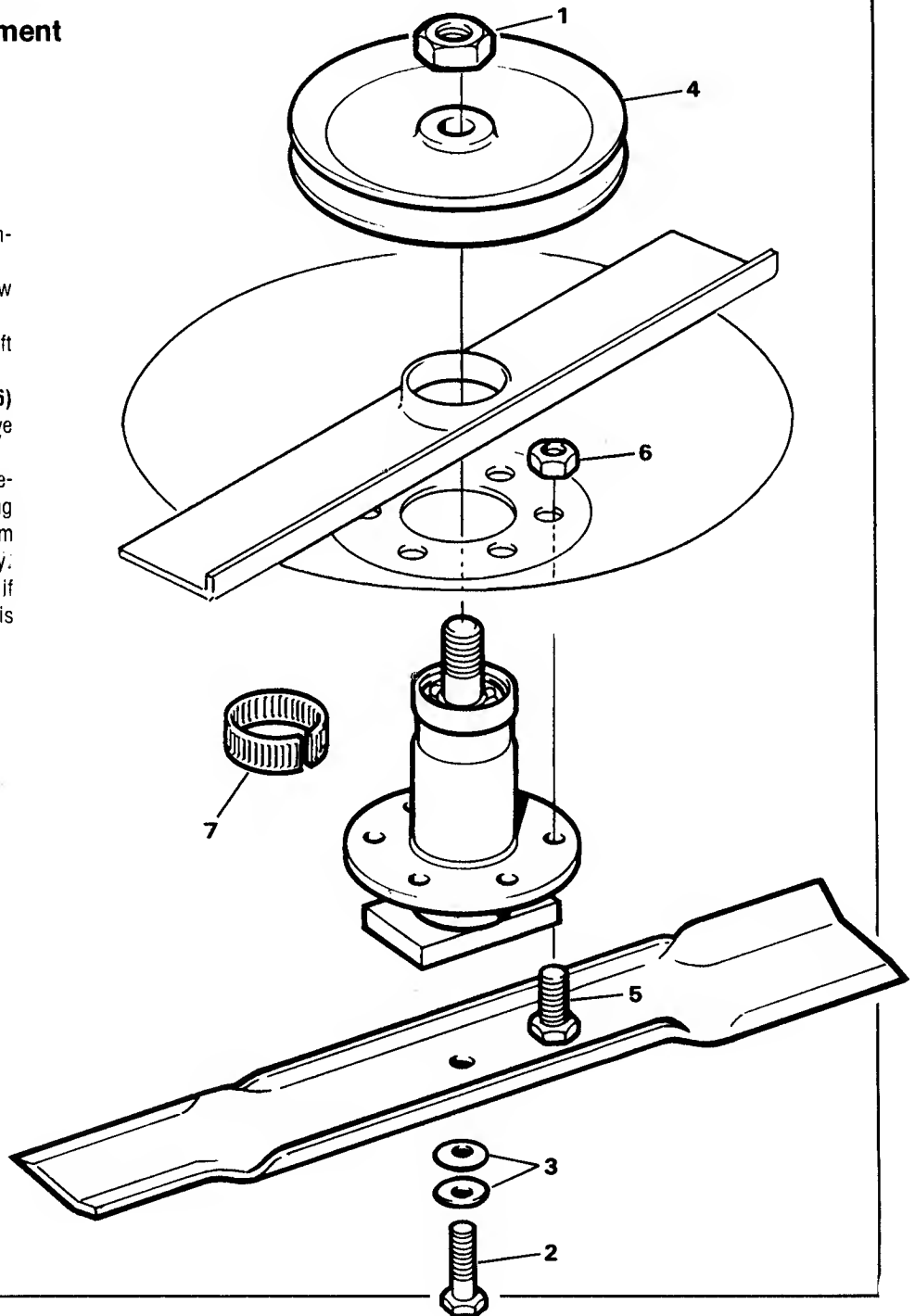
The spindle can either be replaced as an assembly or rebuilt using individual replacement parts. The following procedures are outlined separately and are performed with the mower assembly removed from the tractor.

### Spindle Assembly Replacement

#### WARNING

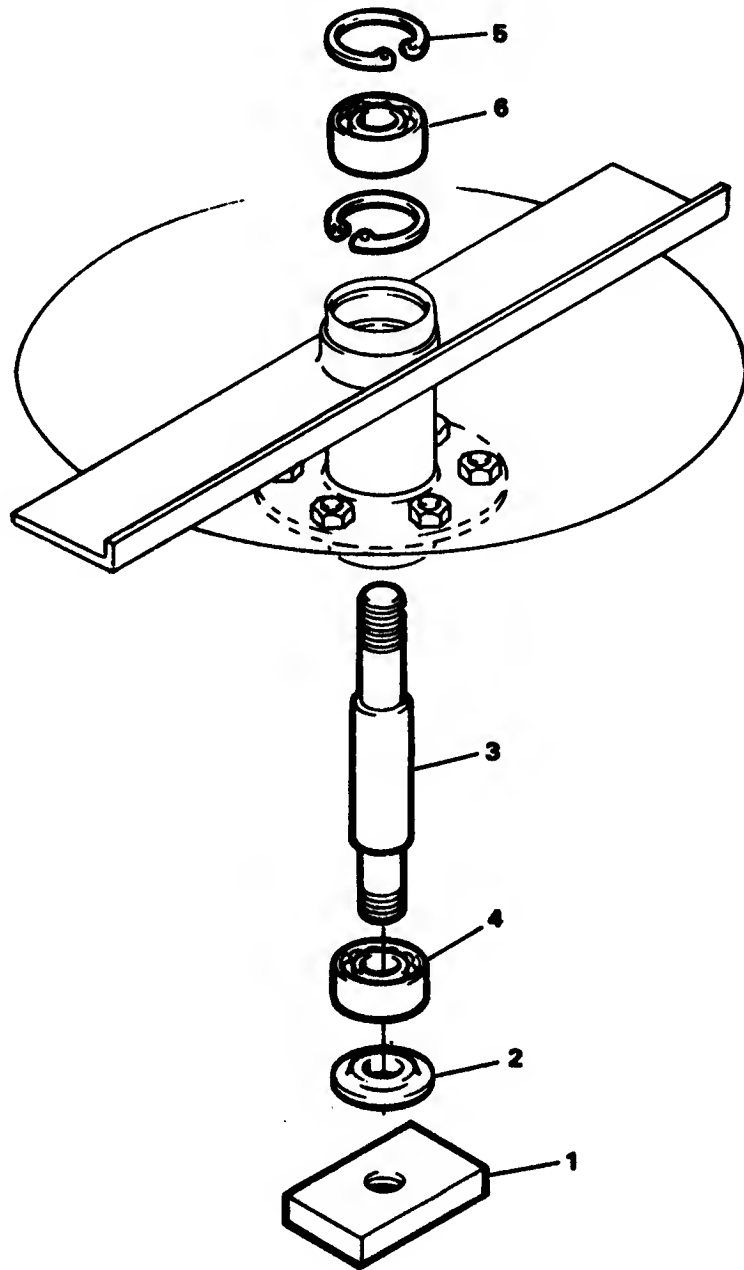
Do not handle cutting blade with bare hands; wear gloves. When removing blade from mower, block it from turning with a block of wood.

- ☐ Hold blade from turning and loosen spindle pulley nut (1).
- ☐ Remove the blade by removing capscrew (2) and cone washers (3).
- ☐ Remove spindle pulley nut (1) and lift pulley (4) from spindle shaft.
- ☐ Remove six screws (5) and nuts (6) securing spindle housing to deck and remove the spindle assembly from deck.
- ☐ Reverse the foregoing to install replacement spindle assembly. Install tolerance ring (7) to the new spindle assembly. This item does not come with a new spindle assembly.
- ☐ Check blade alignment and adjust if necessary. Refer to "Adjustments" in this section.



## Spindle Assembly Overhaul

- ☐ Perform the first three steps of "Spindle Assembly Replacement." The following procedure does not require the removal of the spindle housing.
- ☐ Strike edge of blade holder (1) with soft face mallet to rotate it loose on threads of spindle. Spin blade holder completely off of spindle.
- ☐ Remove spindle washer (2) from spindle.
- ☐ Using a mallet, tap the top of the spindle (3) downward until spindle and lower bearing (4) are free of housing. Remove lower bearing from spindle.
- ☐ Remove top retaining ring (5) and remove top bearing (6).
- ☐ Reverse the foregoing to install replacement parts in the spindle assembly.

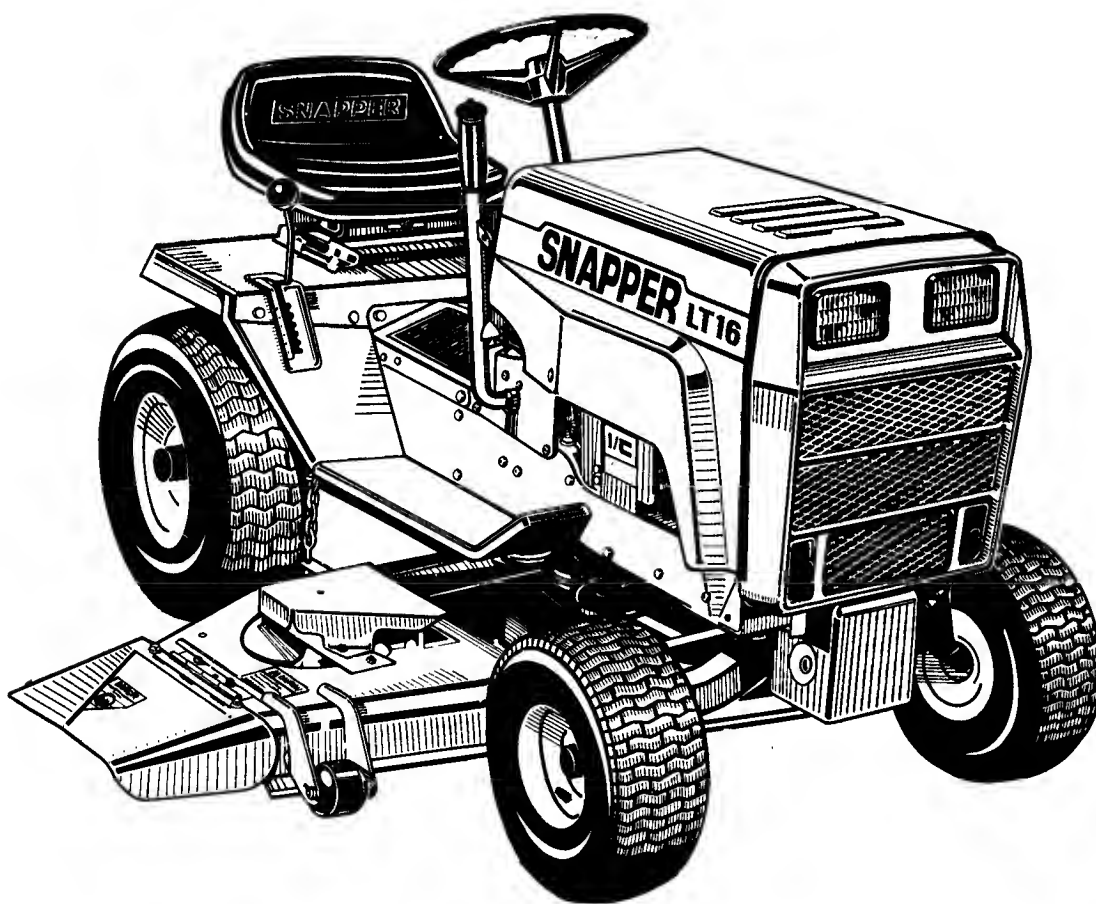


**SERVICE MANUAL for**

***SNAPPER***<sup>®</sup>

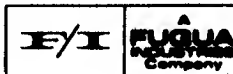
---

**MODEL LT11, LT12.5 & LT16  
SERIES 0, 1 & 2  
DISC DRIVE TRACTORS**



**SNAPPER POWER EQUIPMENT**

McDonough, GA • 30253



(Refer to Service Manual #07007 for Series 3 & Later Yard Tractors)